

Using Ubuntu MATE and Its Applications

Ubuntu MATE 20.04 LTS Edition



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Bushey

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Third Edition

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Table of Contents

Introduction	7
So You've Discovered Linux!	8
The Basics	10
Why Users Switch from Windows	10
Why Users Switch from macOS	11
Ubuntu MATE Works for You, Not the Other Way Around	12
Personalizing Ubuntu MATE	14
Choosing and Changing Panel Layouts	16
Changing the Location of the Window Button Controls	24
Changing the Desktop Background	25
Changing the Theme	26
Modifying the Panels	28
Desktop, Panel, and Menu Icons	30
Display Settings	36
High-Resolution Monitors	38
Power Management	40
Screensaver	46
Adding Software to Ubuntu MATE	48
Installing Trusted Linux Applications	48
Trusted Sources	49
Software Boutique	50
Installing Other Software Center Applications	53
Using the Applications	55
Ubuntu Welcome	55
The Ubuntu MATE Guide	63
Accessibility Software	65
MATE's Applications	72
File Browser (Caja)	72
Text Editor (Pluma)	75
MATE Calculator	78
Archive Manager (Engrampa)	79
Image Viewer (Eye of MATE)	81
Document Viewer (Atril)	83

MATE Disk Usage Analyzer (Baobab)	85
MATE System Monitor	86
MATE Terminal	88
Control Center	93
Ubuntu MATE's Applications	94
Productivity Applications	95
Document Management	108
Entertainment	111
Security	115

Appendices 126

Appendix A: Keyboard Shortcuts	126
Appendix B: Trying and Installing Ubuntu MATE	132
Appendix C: Submitting Feedback on Bugs	138
Appendix D: Additional Resources	142
Appendix E: About the Author	144

About This Book

In the days when all computers came with a complete set of printed and bound hardware and software manuals, you could read and learn about every feature provided with your new equipment. Although this book doesn't attempt to come close to that level of detail, I have written it for computer users who just want the information they need to learn how to use Ubuntu MATE and its applications. Reading this book can help you build your confidence and competence in using Ubuntu MATE. This third edition has been updated with improvements, updates, and new features included in Ubuntu MATE's 20.04 LTS (Long Term Support) release. That does not mean that this book is ONLY for Ubuntu MATE users. Many of the applications available in Ubuntu MATE are also available in other flavors of Ubuntu and in other distributions (versions) of Linux. The applications I mention in this book work in the same way regardless of the operating system.

In addition to the introduction and appendices, this book contains these sections:

- The Basics
- Personalizing Ubuntu MATE
- Adding Software To Ubuntu MATE
- Using The Applications

If you or someone you know needs a more basic introduction to Ubuntu MATE then you might consider the latest edition of my previous publication, "*Ubuntu MATE: Upgrading from Windows or macOS*," listed in Appendix E.

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Attribution and Credits

- Thank you to **Martin Wimpress** and the **Ubuntu MATE team and community** for the inspiration to expand on the Ubuntu MATE Guide I authored for inclusion with the operating system. This book represents that expansion.
- Special thanks to **Bill Smith**, co-host of the Going Linux Podcast. Without his contributions and creative ideas, this book would not have been possible.
- Some content adapted from the **Ubuntu MATE Guide**, provided within the Ubuntu MATE Linux distribution.
- Some content adapted from the MATE Desktop User Guide, published by the **MATE Documentation Project**.
- Some content adapted from the **Going Linux** website and podcast, <https://goinglinux.com>
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Introduction



Ubuntu MATE is an operating system -- the core software that runs your computer, similar to Microsoft's Windows, Apple's macOS, and Google's Chrome OS. Ubuntu MATE is a distribution (variation or flavor) of Linux designed for the beginner, average, and advanced computer user alike. If you are new to Ubuntu MATE, or only casually acquainted with Linux-based distributions, it can take very little effort to understand how Ubuntu MATE compares with other computer systems that you may already use. You will find that Ubuntu MATE is more familiar than different. I've written this book to help demystify Ubuntu MATE for new-comers and to provide a reference for everyone.

Ubuntu MATE Linux is a supported and official "flavor" of Ubuntu, the most widely deployed Linux-based desktop operating system in the world. Ubuntu, pronounced *oo'boōntoō*, is developed by Canonical, Ltd. and you can get it in a number of different flavors, each coming with its own desktop environment.

As the name suggests, Ubuntu MATE provides you with the MATE Desktop for Linux along with the Ubuntu base operating system. The name "MATE" is pronounced "*Mah-Tay*" (not "*Mayt*") and comes from the name of the *yerba maté* plant, a species of holly native to South America. In keeping with that theme, you'll notice that many of the applications provided along with MATE have Spanish sounding names like Pluma (the text editor) and Caja (the file manager).

Note: The majority of the examples and screenshots provided in this book are from the most recent version of Ubuntu MATE 20.04 LTS (Long Term Support). They were created using Ubuntu MATE and its applications.

So You've Discovered Linux!



Once you become aware that there is dependable, secure, capable, and modern software to run your computer that rivals all others in popularity and actual use, you will want to try the Linux operating system. Perhaps you've already been using a member of the Unix/Linux family - Linux, Android, ChromeOS, BSD, Azure Sphere, or even macOS - for quite a while. If so, you are likely looking for new ways to optimize your technology for the way you work.

You've likely switched to Linux to be able to use software that is like your previous computer's software, only better. By "better" you probably mean: a modern but familiar user experience, easy to understand and use, designed with security built-in, and with protection from viruses and spyware included. You want all of that included and upgradeable at no additional charge. You want it all to "just work" with minimal or no maintenance -- automatic security updates and software upgrades for both the operating system and all of your installed applications. You don't mind paying for software, but you prefer the "try before you buy" philosophy. Ubuntu MATE gives you all of that and more!

While it is great for users who have migrated from Windows or macOS, Ubuntu MATE is also an excellent choice for any kind of computer user, from casual home user to professional software developer. That's because of its modern, functionally thought-out design. Ubuntu MATE is capable enough for even the most experienced computer user because, well, it's Linux! It has the power of every other Linux built-in. Simply put, it provides a practical alternative to other software that can run on your computer.

With that in mind, this book is written from the perspective that Ubuntu MATE is a typical modern Linux for the average computer user.

Let's assume that our fictional "average user" is someone who needs to browse the Internet, check email, use a text editor or word processor, and maybe read and store document files. Let's also include viewing and editing photos, watching videos, listening to music, and subscribing to podcasts. As soon as it's installed, Ubuntu MATE provides you with applications that enable all of those capabilities. Whether you are new to Linux, upgrading from Windows or macOS, or just thinking about moving to Linux, this book will provide you with practical, day-to-day guidance on how you can use Ubuntu MATE and its applications.



The Basics

Why Users Switch from Windows

In addition to common and well-founded concerns around security, I often receive questions and comments from Windows users who have, over time, become more and more dissatisfied with Microsoft's operating system. It seems that after purchasing and installing a new version of Windows or, more likely, after purchasing a new computer with the upgraded operating system pre-installed, those users are finding that they have to repurchase newer versions of the same software applications they already own, just to have them work with the upgraded version of Windows. Switching to online, cloud-based software applications might at first seem to be a practical alternative. But those applications are often less capable and at least as expensive, especially after a year or more of paying monthly subscription fees.

To add insult to injury, Windows users sometimes also have to pay for new accessories like printers and document scanners to replace perfectly functioning older models that require software that is no longer compatible with the "upgraded" version of the operating system. They are disappointed that the promise of a "free upgrade" from Windows 7 or 8 to Windows 10 has, in fact, turned out to be anything but free. In fact, they tell me, it can be at least as expensive as previous Windows upgrades have been.

And what about those security concerns? Today, Microsoft provides comprehensive updates and malware protection built into Windows. Most computer manufacturers who supply Windows with their hardware seem to feel they must also provide additional third-party anti-malware and anti-virus software to provide adequate protection.

Although it's admirable that automatic updates are provided with the operating system, Windows users report that the way Microsoft has implemented their updates, they are often forced to restart the computer right in the middle of their workflow! Sometimes there are updates with multiple restarts that cannot be stopped or postponed. This can leave the computer unusable for a half-hour or more. That behavior sends Windows users looking for alternatives to allow them to stay productive all day long.

Why Users Switch from macOS

Switching to Apple's macOS doesn't get you off of the treadmill of spending increasing amounts of money for software and hardware upgrades. If anything, it accelerates that treadmill. Apple's recent direction with its products seems to continue the trend of ever-more expensive products that eliminate as many of its printer, monitor, keyboard, mouse, and other accessory ports as possible. They require expensive dongles and adapters just to connect common accessories! They've also been sealing shut the computer's case on newer models, eliminating the possibility of replacing or upgrading on your own, simple things like RAM, hard drives, and broken parts.

And what about those computer users who switched to the reportedly more secure macOS to avoid their security concerns with Windows? Third-party protection is also recommended for Apple's operating system and macOS also forces updates, seemingly without warning, that can sometimes be neither stopped nor postponed. Apple's forced reboots that cause periods of zero productivity are usually less frequent than Microsoft's but when they occur they require you to pause your work for more than a few minutes while the updates are applied and the computer restarts.

Ubuntu MATE Works for You, Not the Other Way Around

Ubuntu MATE makes modern computers fast and old computers usable. Often, neither Microsoft nor Apple will let you upgrade that perfectly-functioning computer hardware you purchased a few years ago, even though it has almost the same specs as the newest computers available today. You are told your current hardware 'isn't capable' of running modern software. Insultingly, your Windows computer that is supposedly incapable of running more modern software keeps trying to force you to upgrade to the incompatible version!

And the security concerns? Read on to see how Ubuntu MATE and other distributions of Linux are more secure and better supported than other operating systems. Although third-party antivirus software is available for Linux, it is most frequently used to scan for infections in files that are being shared with or by Windows users. Ubuntu MATE is designed to make it difficult for viruses, rootkits, and other malware to be installed and run without conscious intervention by you, the user. Ubuntu MATE receives updates continuously and the updates include security patches for Ubuntu MATE and its installed applications, all provided on the same frequent schedule. This ensures that you have the latest protection for all of your computer's software right away. You choose whether you want to have updates occur automatically or manually and updates to Ubuntu MATE and its installed applications that require disruptive rebooting are a rarity!

Perhaps you'd rather learn how to optimize your use of Ubuntu MATE than hunt down one more Windows hack or Apple workaround to prevent your computer from doing things you don't want it to be doing. Maybe you just want to use your computer to get things done. Maybe you believe your computer should be doing work for you, and not the other way around. Ubuntu MATE is designed to make all of that a reality!

Modern and Full-Featured

When you try Ubuntu MATE, you'll find that it is a free, full-featured, and modern computer operating system, with an attractive and easy to understand user interface. Its update manager keeps both the operating system itself and all of its installed applications updated to the most current, most secure release. The operating system is more secure and better-supported than operating systems that come pre-installed on most personal computer hardware today. With modest hardware requirements, Ubuntu MATE is suitable for modern workstations and laptops, single board computers and older hardware alike.

Pre-Configured Yet Flexible

Using Ubuntu MATE provides you with the freedom to run a complete, full-featured operating system, pre-configured with most, if not all, of the applications you will need for your daily computing. Or you can change anything about the way it looks, the way it works, or the applications it runs to suit your taste.

Built-In Security

Ubuntu MATE is designed with security in mind. Unlike operating systems that update only once a month, Ubuntu MATE keeps you safe and secure by receiving updates continuously. The updates include security patches for Ubuntu MATE and all of its components. Security updates for its installed applications are also provided on the same schedule. This ensures that you have the latest protection for all of your computer's software -- as soon as it's available!

Personalizing Ubuntu MATE



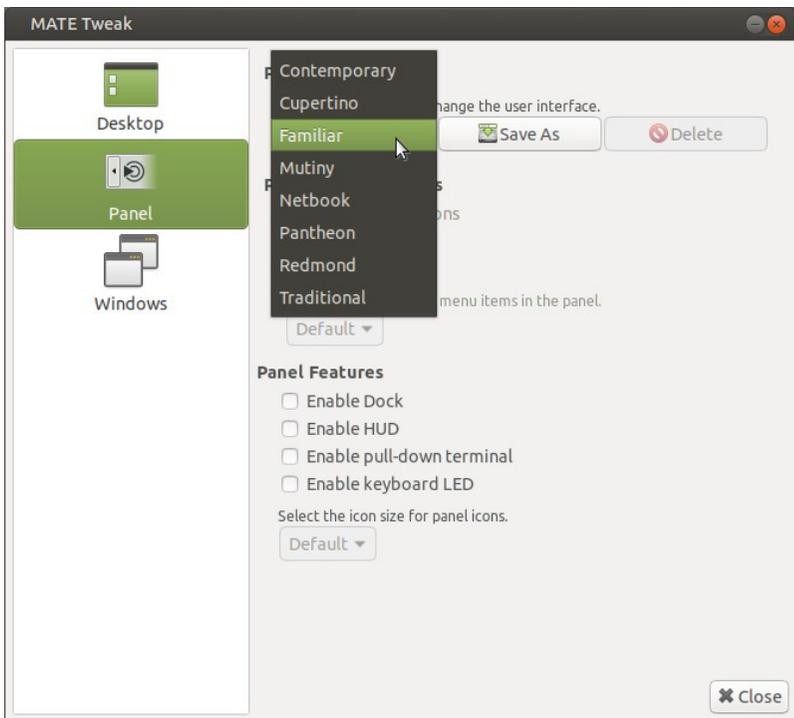
Although you can do some basic tweaking out of the box with other operating systems, Linux is infinitely more configurable than macOS or Windows. Sure you can purchase add-on software to personalize your Windows desktop, but Ubuntu MATE provides the customization tools built right in, with even more apps and utilities just a few clicks away in the software repositories. (Repositories are like a free software store.) The thing that makes Ubuntu MATE so much more flexible is that it has been designed to be customizable.

So, what can you do with Ubuntu MATE? Start simple and change the background image (desktop wallpaper). Or get adventurous and alter the menu position or make your desktop a virtual "dashboard" for displaying the health and performance of your computer's hardware. You can even revamp the Ubuntu MATE desktop to make it look and behave convincingly like macOS or Windows! Covering all of the possibilities for customization would fill an entire book, so this section will simply give you some ideas as to what can be done, and it will be up to you to explore on your own how you can configure your system to make it look and work the way that best suits your workflow and your style.



As you learn about Ubuntu MATE, you might find it more comfortable to put things where you were used to finding them on your previous system.

Ubuntu MATE provides the unique MATE Tweak tool to do just that -- to transform the look and feel of your computer. The MATE Tweak application is found in the Ubuntu MATE menus at *Menu* > Control Center > MATE Tweak* and can be used to quickly change how things look and feel. You can even make Ubuntu MATE look and work like other popular operating systems if that's what you want. Or you can give it a unique and distinctive look of its own so that anyone looking at your screen can tell you aren't using the same computer software they are!



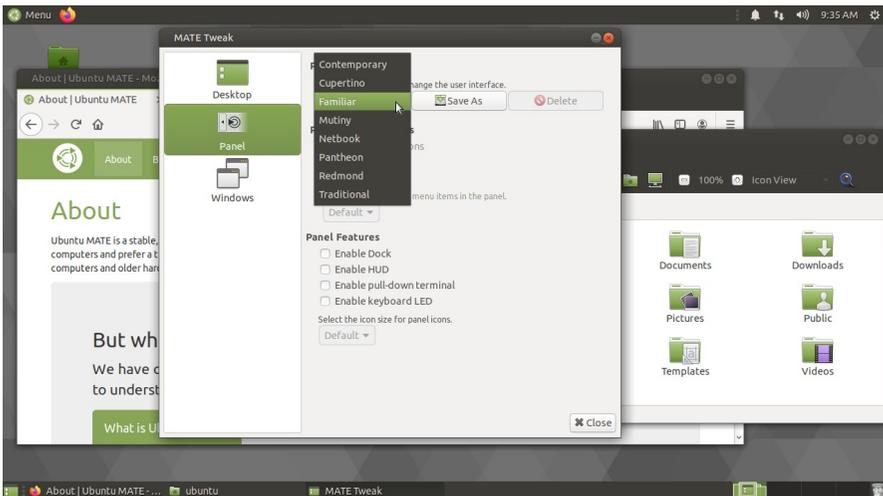
* *Note:* Your first Ubuntu MATE menu choice depends on which of the Panel Layouts you have selected. If you chose the default *Familiar* layout, the first menu item is "Menu". It is also the first menu item for *Contemporary*, *Redmond*, and *Pantheon* layouts. "Applications" is the first item for the *Traditional* layout. The *Netbook*, *Mutiny*, and *Cupertino* layouts have no label and simply display the Ubuntu MATE logo to represent the menu.

Choosing and Changing Panel Layouts

One of the quickest ways to change the look and feel of Ubuntu MATE is to select a different panel layout using MATE Tweak. Each panel layout is distinctive and provides a different desktop workflow. The following descriptions and screenshots will let you see what I mean.

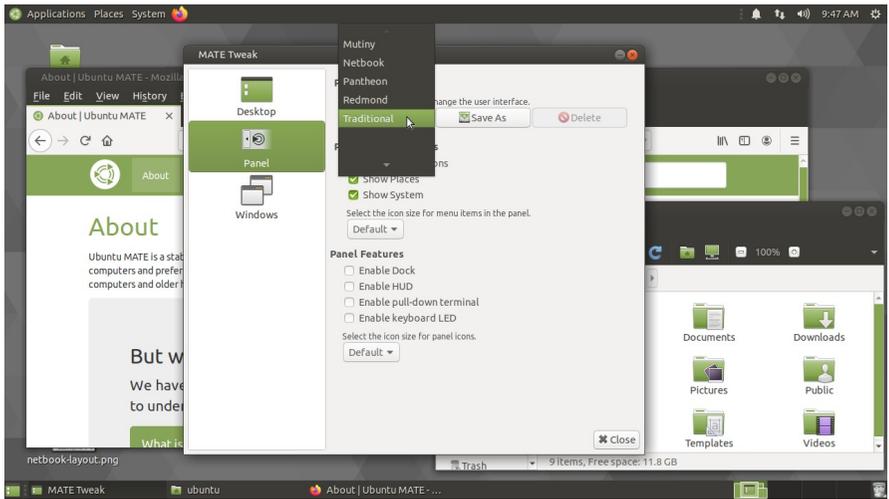
Familiar (Ubuntu MATE) Layout

When you first install Ubuntu MATE, you'll be using its own layout, named Familiar. The Familiar layout, introduced in Ubuntu MATE's 18.04 release, is based on the Traditional layout but with its menu-bar selections (Applications, Places, System) replaced with the "Brisk Menu's" simple "Menu" button. The Familiar layout has a clock in the top right and a panel with the list of open applications at the bottom of the screen. The menu for each application appears at the top of the application's window in a familiar way. (It's "familiar" if you are used to the way it's done on Microsoft's application windows.) If you prefer to try something else, you can select a different panel layout using the "Panel" options in MATE Tweak.



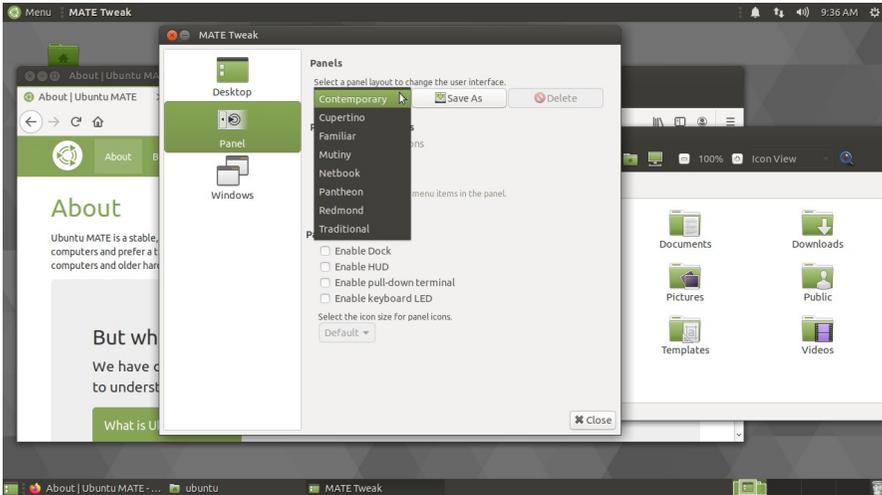
Traditional Layout

The Traditional layout was the default Ubuntu MATE Layout prior to release 18.04. It has a classic look of Linux with a menu-bar (Applications, Places, System) in the top left, clock in the top right, and a panel with the list of open applications at the bottom of the screen. The menu for each running application appears at the top of that application's window. This is the traditional way application menus appear on Microsoft's application windows.



Contemporary Layout

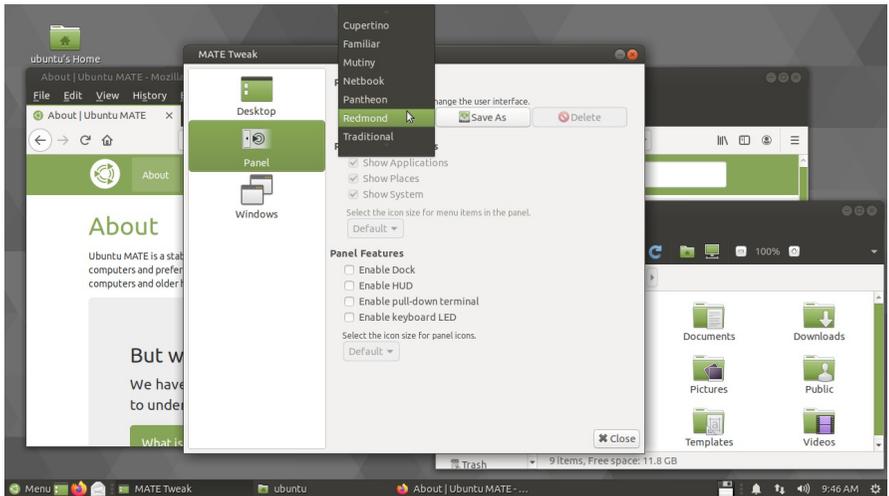
The Contemporary layout has the classic look of Ubuntu MATE's default Familiar layout, with a "Menu" button in the top left, clock in the top right, and a panel with the list of open applications at the bottom of the screen.



A significant difference from the Familiar layout is that, in the Contemporary layout, each application's menu always appears in the top panel rather than within the individual application's window. Called the "Global Menu," this feature was introduced with Ubuntu MATE 17.10 and is implemented in the traditional way Apple handles menus for its application windows.

Redmond Layout

The Redmond layout is similar to Microsoft Windows, with a single taskbar containing a menu, a list of open applications, and a clock at the bottom of the screen. Each application's menu appears at the top of that application's window in the traditional Windows way. The name "Redmond" is a sly reference to the US city where Microsoft's headquarters is located.



Another distinctive feature of the Redmond layout is the "Advanced Menu" you'll find under the "Menu" button. It provides a configurable list of your favorite applications as well as an optional simple list of all applications. You will find this familiar if you've ever used the Linux Mint distribution.

Cupertino Layout

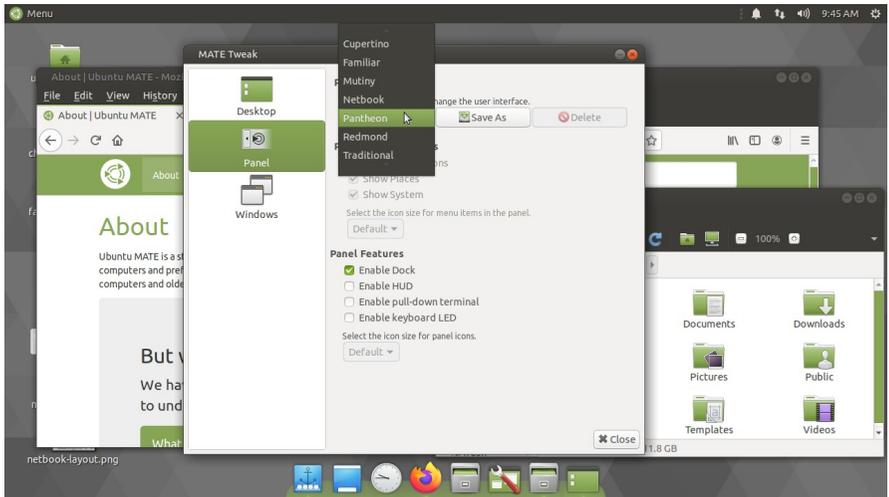
The Cupertino layout is similar to Apple's macOS with a panel at the top of the screen and a configurable dock at the bottom. The dock is used to display the pinned and open applications, and to launch applications. Of course, this layout uses the "Global Menu" so that the application menus always appear in the top panel rather than on the application windows, in the traditional macOS way. The name "Cupertino" is a reference to the US city where Apple's headquarters is located.



You'll notice one distinctive difference between macOS's Apple logo icon and the Cupertino layout's Ubuntu MATE logo icon in the top left corner. When you click the logo, instead of a limited list that gives you access to some basic system tools, Ubuntu MATE gives you access to the entire collection of applications, utilities, and system tools installed on your computer. It's a full menu!

Pantheon Layout

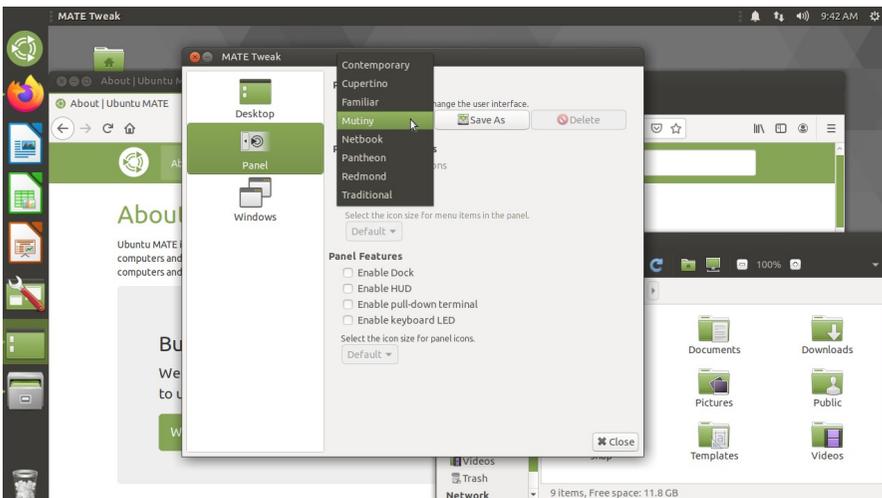
The Pantheon layout is a blend of the Contemporary, Cupertino, and Redmond layouts. It has both a "Menu" button in the top left and a dock at the bottom of the screen that displays pinned and running applications. Each application's menu appears at the top of that application's window, just as it does in the Redmond layout.



Perhaps you like some features of the Windows desktop and some features of the macOS desktop. If you've ever wished that there was an operating system that gave you the best of both desktops, then maybe the Pantheon layout can grant that wish!

Mutiny Layout

If you have tried other Ubuntu flavors and you like the look of the Unity desktop, you'll find the Mutiny layout familiar. It mimics, as closely as possible, the Unity 7 interface used in traditional Ubuntu through 2017 and is similar to the interface used in the more recent Gnome-based versions of Ubuntu. Mutiny uses the "Global Menu" to display application menus in the top panel, not in the application windows. Mutiny also has a dock of icons on the left of the screen to launch applications and to show pinned and running applications.

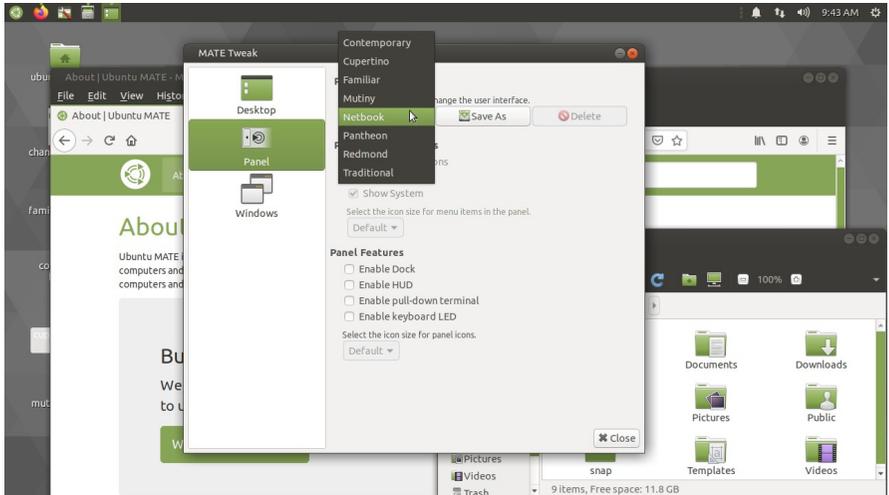


Note: What's with the name? "Mutiny" is a reference to controversies that arose in Ubuntu's evolutionary history. When Ubuntu changed their standard desktop from the Traditional style to the Unity style, some Ubuntu users disliked the change and switched to other desktops environments. Similarly, when Ubuntu changed from the Unity style desktop to the current Gnome 3 style, some users protested that change as well. Ironically, recent updates to Ubuntu's implementation of Gnome 3 have made today's desktop look very similar in form and function to the Unity desktop. Consequently, Ubuntu MATE's Mutiny layout looks and behaves much like both Ubuntu's Unity desktop and the newest desktop in use today.

As you can see, Ubuntu MATE avoids these polarizing views on desktop environments by taking advantage of the underlying flexibility of Linux. It's extremely easy to use MATE Tweak to design a desktop for the way you use your computer.

Netbook Layout

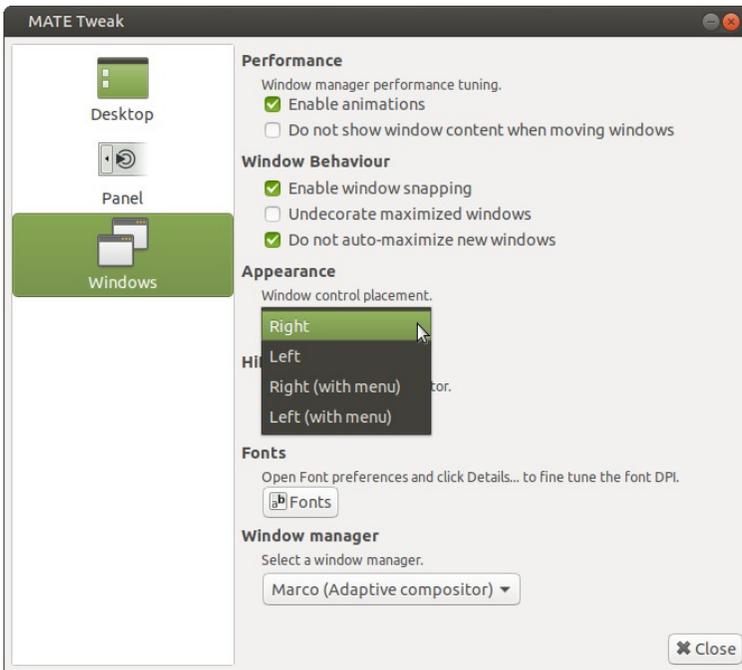
Designed specifically for small screens, the compact Netbook layout has a single taskbar, menu, clock, and list of open applications at the top of the screen. There is no dock or panel at the bottom. That way everything is accessible no matter how small your screen.



Of course, since this is Linux, with any of these eight layouts, you can move the panels to the sides of your screen if you like, you can add or remove a dock, and you can even name and save your own customized panel layouts to make it easy to switch between them. All of this is done from MATE Tweak. Using the MATE Tweak application, you also can control the size of the icons that appear in the panels, which icons display on your desktop, and whether the windows show some animation or snap into position when they open. As you'll see next, you can even change whether the window controls for Close, Minimize and Maximize appear on the left, like macOS, or on the right, like Windows.

Changing the Location of the Window Controls

Another quick way to adjust the look of your Ubuntu MATE desktop is to change the location of the window controls. You know: the buttons you use to minimize, maximize, and close a window. Ubuntu MATE let's you put them on the left like on macOS or on the right like Windows. You can also include or exclude a button that displays a menu with more window options. You may notice that the screen shots included in this book have a mix of button locations. Choose the location that you like best or switch between them as your mood changes.



To change the location of the window buttons:

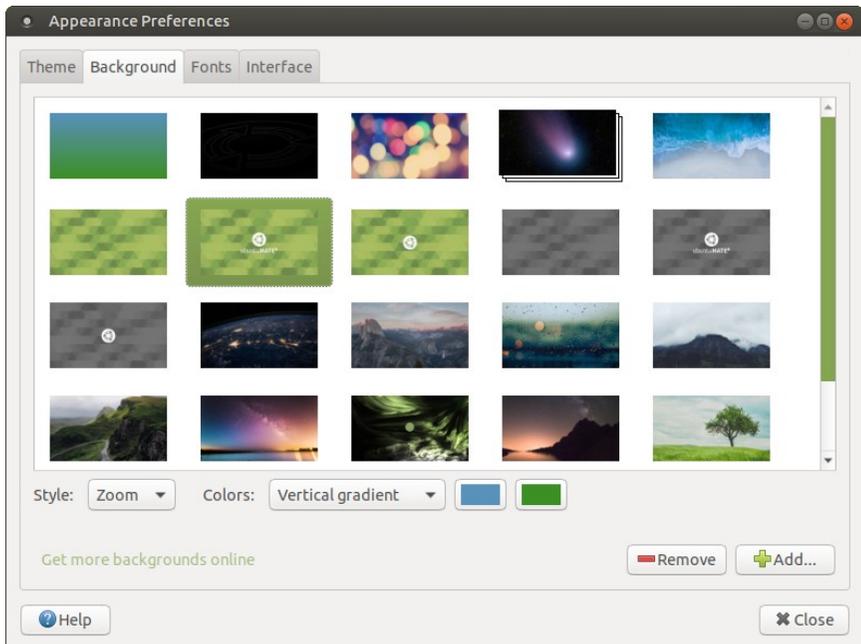
1. Open the MATE Tweak application by selecting *Menu > Control Center > MATE Tweak*.
2. Choose the *Windows* icon in the pane on the left side of the MATE Tweak window.
3. Adjust the value for *Window control placement*.

Changing the Desktop Background



Most desktop environments allow you to change the background wallpaper by right-clicking on the desktop itself, then selecting the appropriate option from the context menu that appears. Ubuntu MATE is no exception.

1. Right-click the desktop and choose *Change Desktop Background*. If you prefer, you can use the menus: *Menu > Control Center > Appearance > Background*.
2. Select the image you want to use.
3. If you have a picture on your computer's hard drive that you want to use, click the **Add** button, locate the file, and then click **Open**.
4. Your background changes immediately. Click **Close**.



Note: You can use the link on the lower left of the Appearance Preferences window to download more images from the Internet. Always make sure you use only trusted sites to obtain new background images.

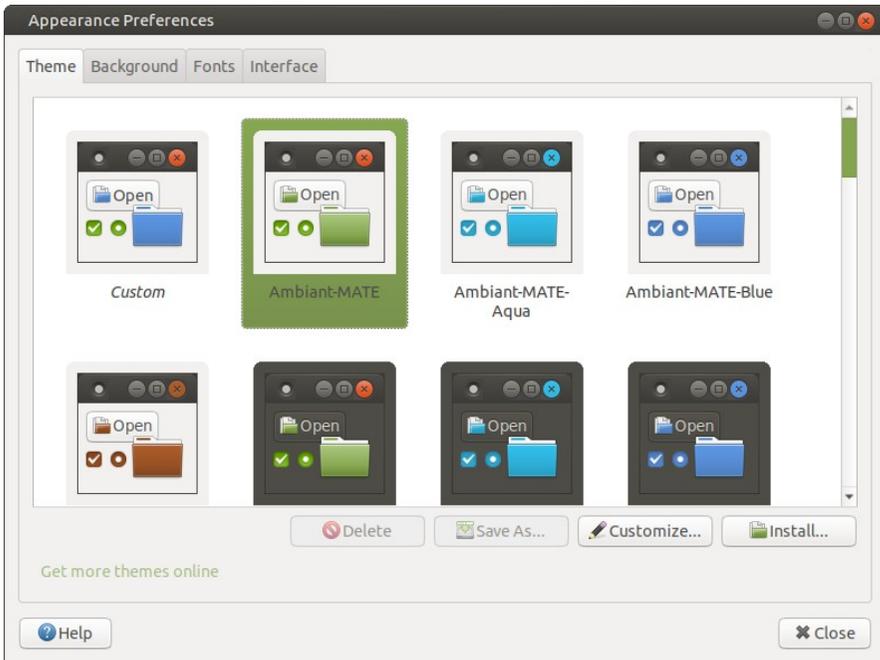
Changing the Theme



A desktop theme can include the set of fonts and colors used on your desktop, the size and style of icons, the size, shape and color of the borders of each window, whether there are 3-D or animation effects, and even whether the buttons have icons. Do you like the Windows 10 or macOS Mojave dark mode themes? Try Ambient-MATE-Dark!

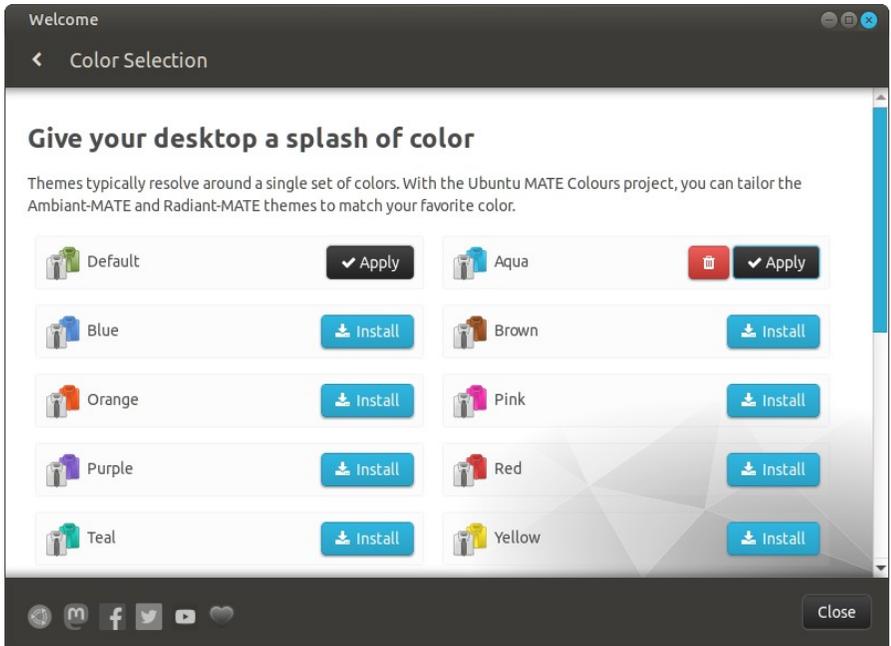
Changing your theme is just as easy as changing background wallpaper.

1. From the menus choose *Menu > Control Center > Appearance > Theme*.
2. Select the theme you want to use from the list.
3. Your theme changes immediately. Click **Close**



Note: You can use the link on the lower left of the Appearance Preferences window to download more themes from the Internet. Always make sure you use only trusted sites to obtain new themes.

Green isn't your color? From the Welcome app, use the color selection option to install up to nine additional color variants of the popular Ambient-MATE, Ambient-MATE-Dark, and Radiant-MATE themes. Choose from Aqua, Blue, Brown, Orange, Pink, Purple, Red, Teal, and Yellow. Once you have installed additional themes you'll find them listed along with the default choices. Pick the theme and color that suits you best, or change the color to match your shoes!

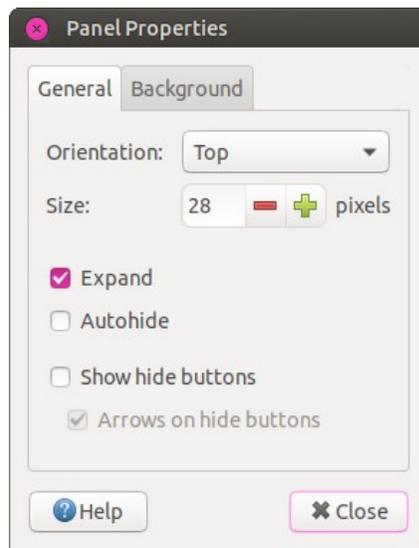


Modifying the Panels



The bars at the top and bottom edges of Ubuntu MATE's Traditional Layout are called Panels. Apple's macOS has a menu panel at the top edge of the screen. The icons that are typically at the bottom of a macOS desktop are actually in a dock and not truly in a panel. The single panel in Windows is known as the "taskbar" and is typically located at the bottom edge of the screen. You can easily modify the top and bottom panels of Ubuntu MATE in many ways and move them into a different position on the screen. You can also have more or fewer than two panels if you wish.

1. Right-click a blank space in the panel and choose *Properties* from the menu.



2. From within the dialog box, you can edit *Orientation* to choose whether you want the panel at the top, at the bottom, or on one of the sides of your screen.
3. You can increase the size of the panel, and its corresponding icons.

4. Choose the *Expand* checkbox to make the panel go completely across the screen. Uncheck it to make it behave more like a dock.
5. Use the *Show hide buttons* setting with *Expand* unchecked to make buttons appear at either end of the panel to let you adjust its size.
6. The *Autohide* setting causes the panel to vanish when you move the mouse cursor away from it and reappear when your mouse reaches the edge of the screen where you placed the panel.
7. The *Background* tab gives you more options for the appearance of the panel, including the ability to make it completely transparent, a solid color, or add a graphic background image.
8. Click **Close** to complete your modifications for this panel.
9. To add an additional panel, right-click an existing panel and choose *New Panel*.
10. Right-click the new panel you just created and choose *Add to panel* to add launchers, monitors, and other panel items. (You can do this with existing panels, too.)
11. Now start over at step one, above, and edit the preferences for your shiny new panel!

Desktop, Panel, and Menu Icons

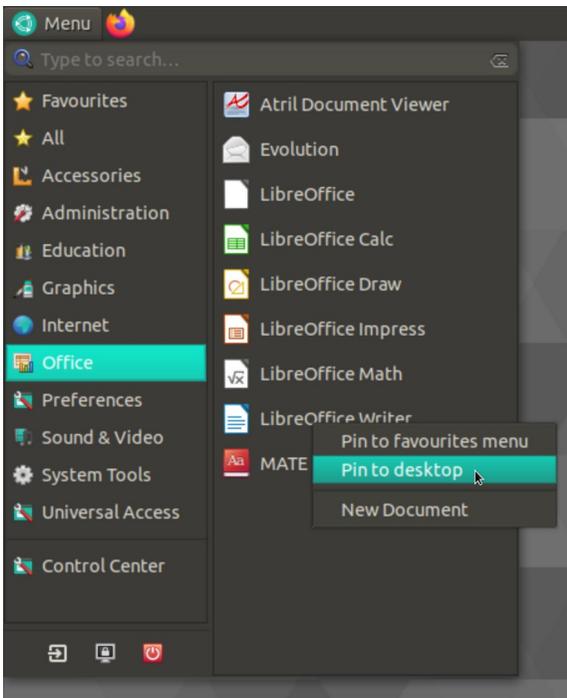
Creating Application Icons From the Menu



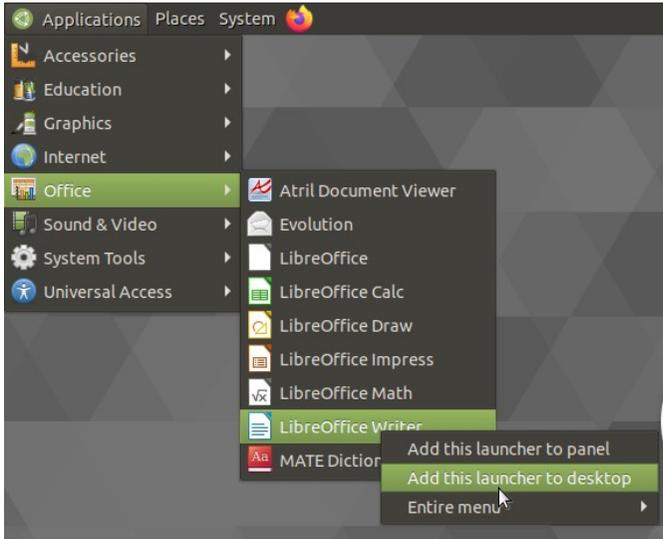
Ubuntu MATE makes it very easy to add icons, also referred to as shortcuts or launchers, to your desktop for your most frequently used applications. I'll show you how to add the word processor icon to your desktop. The process is exactly the same for any application that appears in the Ubuntu MATE menus.

These are the steps to follow:

1. Locate the application in the menu. For the word processor application, select *Menu > Office*. (If you have chosen the Traditional Panel Layout, select *Applications > Office*.)
2. Now locate, but do not click on the *LibreOffice Writer* icon.



3. Right-click on *LibreOffice Writer*.
4. From the context menu that appears, select *Pin to desktop*. (If you have chosen the Traditional Panel Layout, select *Add this launcher to desktop*.)



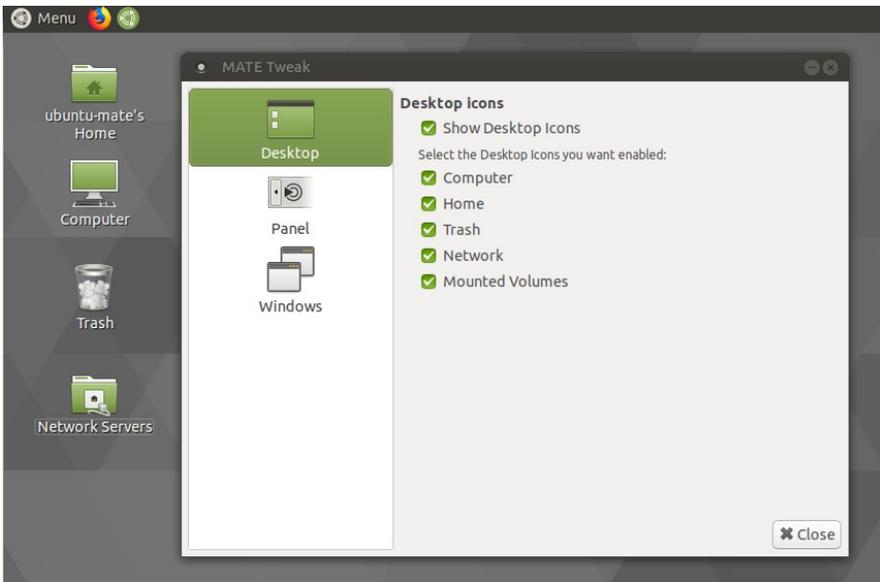
The finished launcher will appear on your desktop as shown below. You can move it around and place it anywhere you want on the desktop.



Note: If you are using the Brisk menu, the same context menu lets you pin the icon as a shortcut icon to the Favourites menu! You find the Favourites menu at *Menu > Favourites*.

Creating System Icons Using MATE Tweak

If you want to create System icons for such things as your "Computer," your "Home" folder, the "Trash" icon, an icon to access locations on your "Network," or "Mounted Volumes" like USB drives and DVD drives, then Ubuntu MATE makes that easy for you, too. You simply use the MATE Tweak application, located in Control Center to select the icons you want to be displayed. The screenshot below shows your "Desktop" options. Ensure that the *Show Desktop Icons* setting is checked to be certain that the icons you've selected are visible on your desktop.

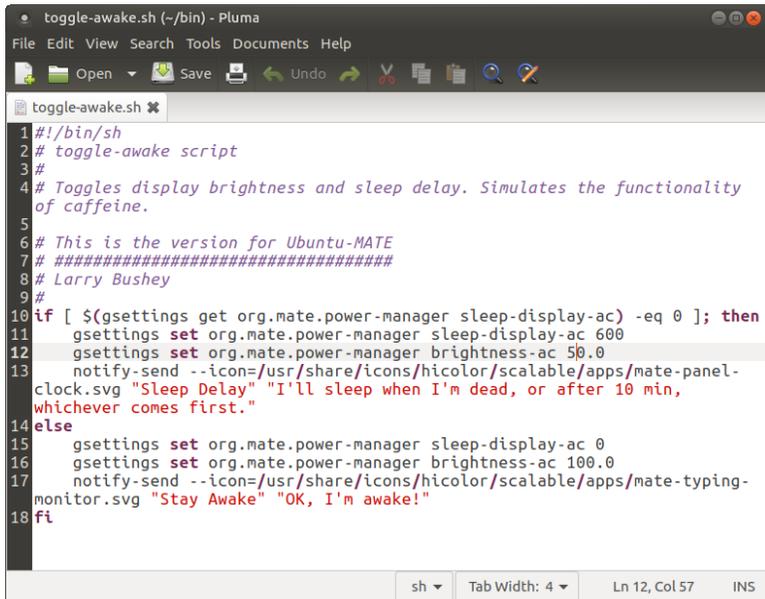


Creating Launcher Icons in the Menu

Ubuntu MATE provides you with the ability to edit the main menu in the top panel. This can be very helpful if, for example, you have created a bash script that you want to launch from the menu like any other application. You can even give it a custom icon.

Example: Launching a Script

In this example, you'll see how I added a custom icon to run a script that toggles on and off 100% screen brightness and a sleep delay. Remember, this is just one example of how you can add entries to the menus. You can add a menu item for a script like this, you can add a menu item for an application, or you can add a menu item to open a specific document in a word processor or other application. It's up to you.



```
toggle-awake.sh (-~/bin) - Pluma
File Edit View Search Tools Documents Help
toggle-awake.sh x
1 #!/bin/sh
2 # toggle-awake script
3 #
4 # Toggles display brightness and sleep delay. Simulates the functionality
  of caffeine.
5
6 # This is the version for Ubuntu-MATE
7 # #####
8 # Larry Bushey
9 #
10 if [ $(gsettings get org.mate.power-manager sleep-display-ac) -eq 0 ]; then
11     gsettings set org.mate.power-manager sleep-display-ac 600
12     gsettings set org.mate.power-manager brightness-ac 50.0
13     notify-send --icon=/usr/share/icons/hicolor/scalable/apps/mate-panel-
  clock.svg "Sleep Delay" "I'll sleep when I'm dead, or after 10 min,
  whichever comes first."
14 else
15     gsettings set org.mate.power-manager sleep-display-ac 0
16     gsettings set org.mate.power-manager brightness-ac 100.0
17     notify-send --icon=/usr/share/icons/hicolor/scalable/apps/mate-typing-
  monitor.svg "Stay Awake" "OK, I'm awake!"
18 fi
sh Tab Width: 4 Ln 12, Col 57 INS
```

The screenshot above shows my "toggle-awake.sh" script open for editing in the Pluma text editor application.

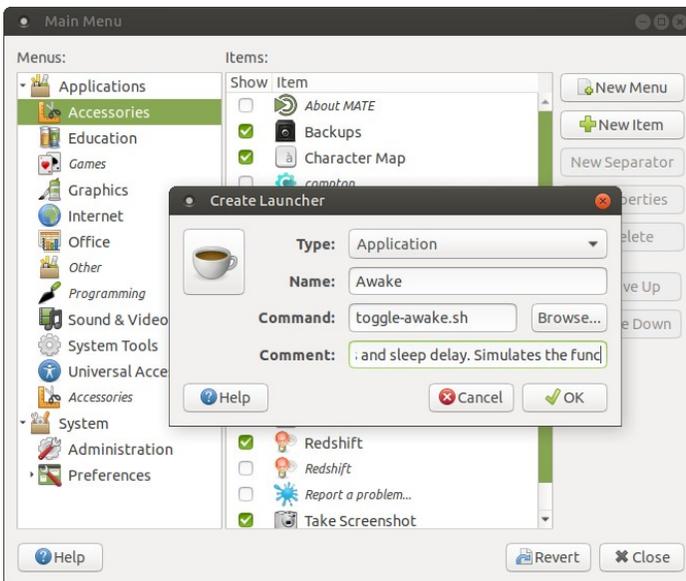
Feel free to copy and use it in a script of your own if you would like to try it and you think it will work for you.

Note 1: If you are writing scripts, the Pluma editor is an excellent tool to use. As you can see by the colored text in the script above, it is designed for this purpose with text highlighting, and there other similar features built-in.

Note 2: Create a folder named "bin" in your home folder and Ubuntu MATE recognizes any file you place in that folder as a potential executable program or script. To change a file's permissions and allow it to run as a program: Right-click on the file in the Caja file manager, select *Properties > Permissions > Allow executing file as program*.

Adding the Menu Item

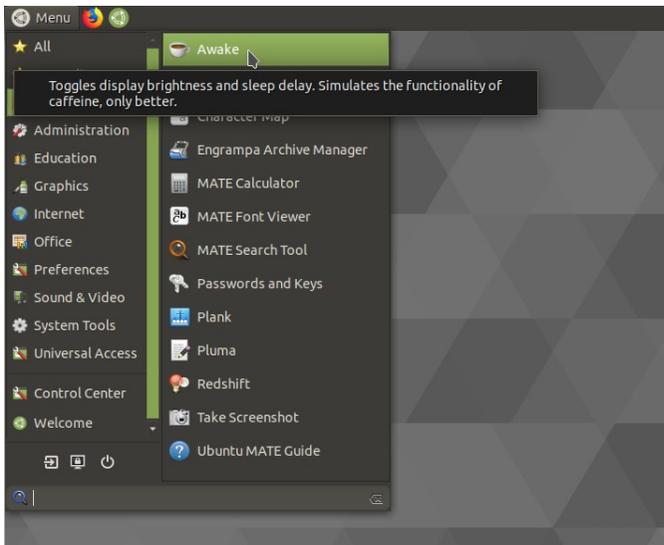
1. In the menus, select *Menu > Control Center > Main Menu*. (Or right-click the *Menu* and choose *Edit Menus*.)
2. In the left pane, select the category under which you want your menu item to appear. For this example, we'll use the "Accessories" category.
3. Click the **New Item** button to start creating your new menu item.
4. To create an icon that launches an application select *Application* as the *Type*.



5. Click in the field labeled *Name* and enter the name you want to appear in the menu. In the example, we named our menu item "Awake".

6. In the *Command* field, click the **Browse** button then navigate to, and open, the application or script you want to run. Alternatively, in the *Command* field, you can type a command as you would enter it in a terminal to run the application. This could simply be the name of the application, the name of your script, or even a long, complex command.
7. Next, in the *Comment* field, enter a description if you wish one to appear when you hover over the icon in the menu.
8. To change the icon for the menu item, click on the icon that is displayed by default. It's a button! Browse the icons and pixmap folders to select the icon you want to use, then click **Open**. For this example, we use a coffee cup icon located here:

```
/usr/share/icons/Humanity/categories/48/applications-  
java.svg
```
9. Click the **OK** button to create your menu item. It now appears in the list of menu items in the category you chose. It's at the bottom of the list. You can change its position in the menu by selecting your new menu item and using the **Move Up** and **Move Down** buttons.
10. Close the editor to begin using your new menu entry.



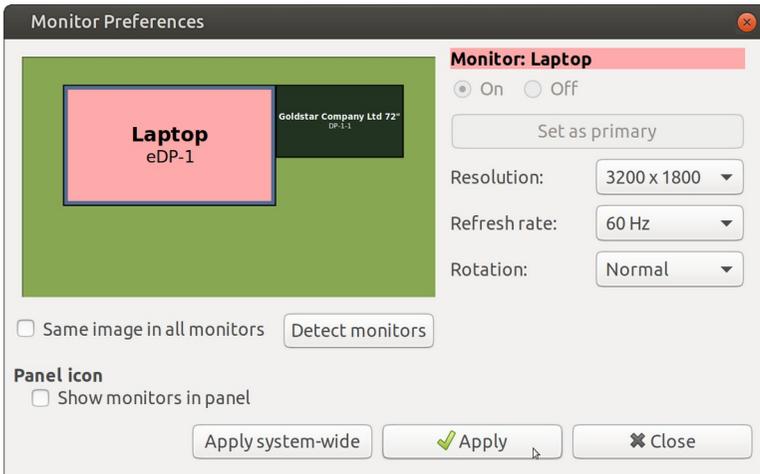
Display Settings

Connecting Multiple Displays

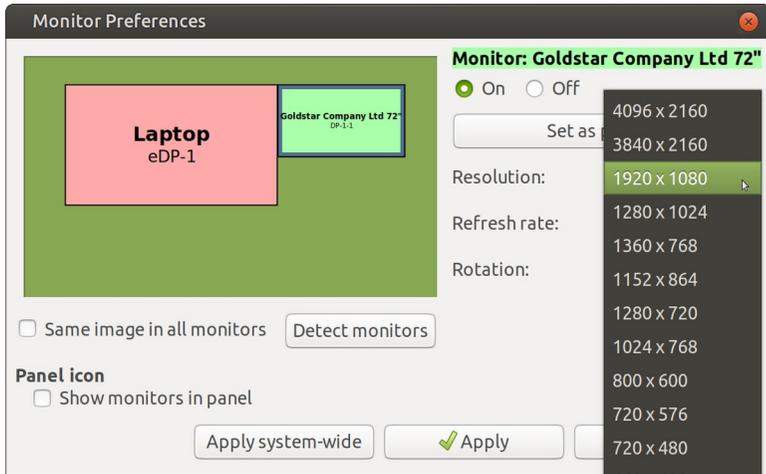


Ubuntu MATE makes connecting multiple monitors and changing the resolution quite easy. You change the monitor preferences by selecting *Menu > Control Center > Displays* in the menus.

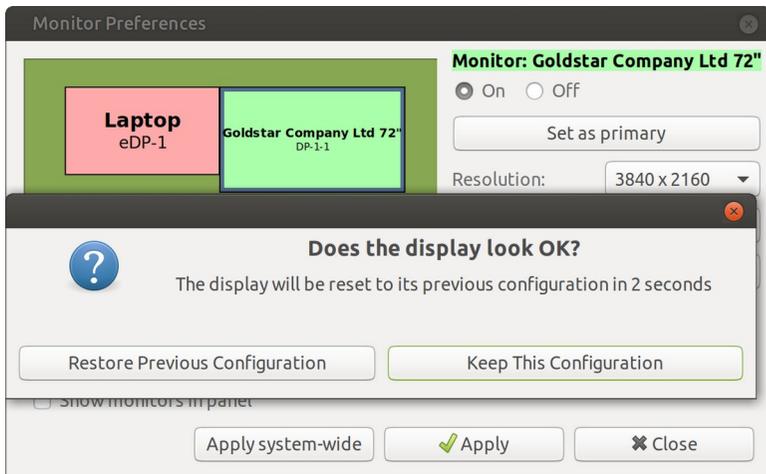
1. When you connect a second monitor, it will likely connect automatically. If it doesn't, simply click on the black rectangle that represents the second monitor and choose the *On* setting. When the display is switched to "On" the rectangle will be in color.



2. Select the resolution settings you prefer. The list includes all of the resolutions that the monitor is capable of displaying. In this example, an HDMI cable is used to connect a 1080P or 4K television as a monitor.



3. To apply the settings, click the **Apply** button.
4. The new configuration is set temporarily. If you don't confirm the settings, for example, if the settings don't work properly, after a short delay the configuration will automatically revert to the previous settings.



5. Click on **Keep This Configuration** to confirm your changes.

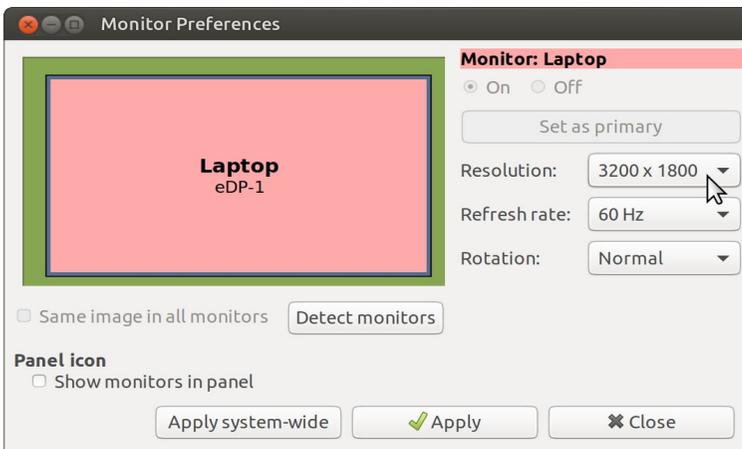
High-Resolution Monitors



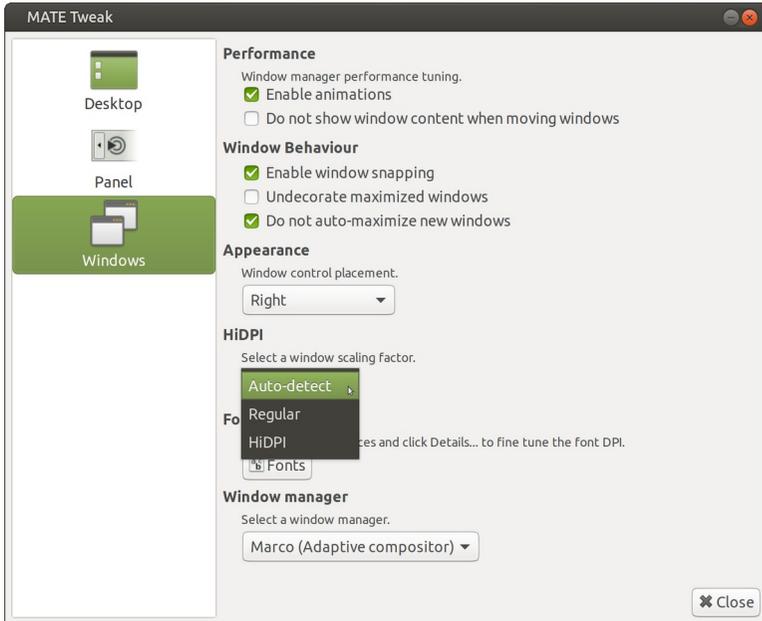
Linux support for high-resolution computer displays (HiDPI, UHD, or 4K displays) has been largely perfected over the past couple of years. With the 18.04 release, the Ubuntu MATE team has included a utility that automatically detects your 4K display and sets the appropriate screen scaling for you. Without scaling, you may find that 4K displays, like screens on such modern laptops as the Dell XPS 13, or external 4K monitors have tiny icons and fonts that make them difficult to see and to use. With HiDPI support, Ubuntu MATE lets you take advantage of the full resolution of your beautiful high-resolution display and still have everything readable.

Of course, Ubuntu MATE allows you to make the decision as to whether to use HiDPI scaling or not. Here is how to make changes to the HiDPI settings.

1. Before we begin modifying your screen settings, use the instructions in the previous section to ensure that your display is set to the highest resolution available. If supported, this will be the high-resolution for your HiDPI monitor. For my Dell XPS 13, this setting is 3200 x 1800 pixels as shown below.



2. Open the MATE Tweak application by selecting *Menu > Control Center > MATE Tweak*.
3. Choose the *Windows* icon in the pane on the left side of the MATE Tweak window.



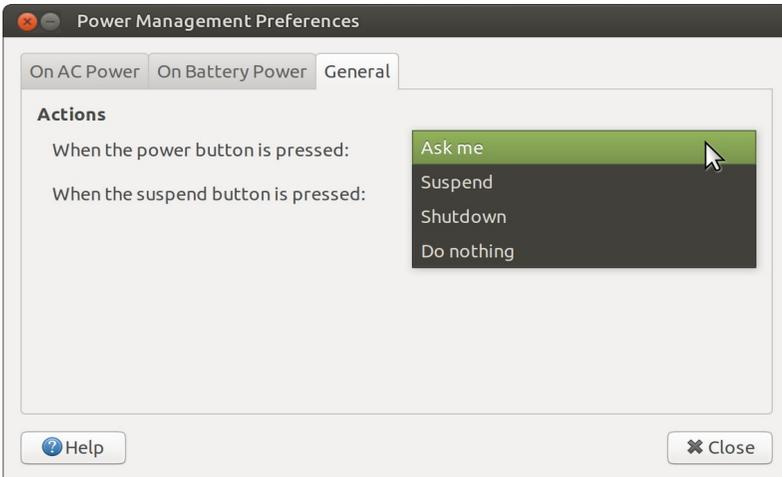
4. In the HiDPI section, adjust the setting labeled *Select a window scaling factor*. Choose *Auto-detect* to have Ubuntu MATE automatically detect and set HiDPI window scaling when it detects a high-resolution monitor. Choose *Regular* if you never want scaling applied. Choose *HiDPI* if you always want scaling applied.
5. Your new HiDPI settings will take effect immediately. No need to log out!

Power Management

Strategies for Improving Battery Life

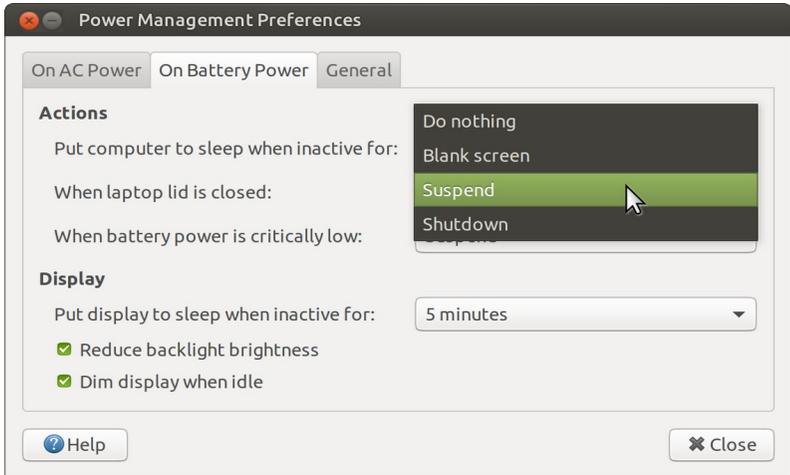


Today you can install Linux on almost any computer hardware -- macOS or Windows PC -- but you will want to be sure that components such as WiFi and graphics cards are supported by Linux. With a computer like one from designed-for-Linux lines such as System76, Entroware, OpenSourcePC, or Dell XPS Developer Edition, you can be sure you'll have the "just works" experience with whatever version of Linux you choose to install. But whether you choose a computer with Linux pre-installed, or you install it on hardware you already own, out-of-the-box laptop battery life can sometimes be disappointing. Here are some things you can do to improve your laptop's longevity when you don't have a connection to AC power.



1. Adjust Power Management Settings

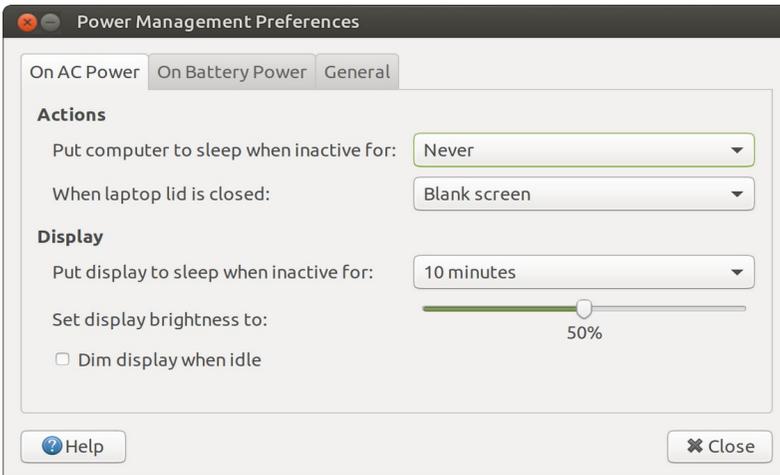
The Power Management Settings, found in the *Control Panel*, allows you to control when the computer sleeps (suspends) or shuts down, and how the display behaves. Focus on the *On Battery Power* settings. To minimize battery consumption, use the "Suspend" setting when closing the lid and when the computer is idle.



In addition to using the suspend and shutdown settings, reducing the backlight brightness and dimming the screen while idle can reduce the battery drain while operating on battery power. Using a dark theme and wallpaper can help reduce the backlight's brightness as well.

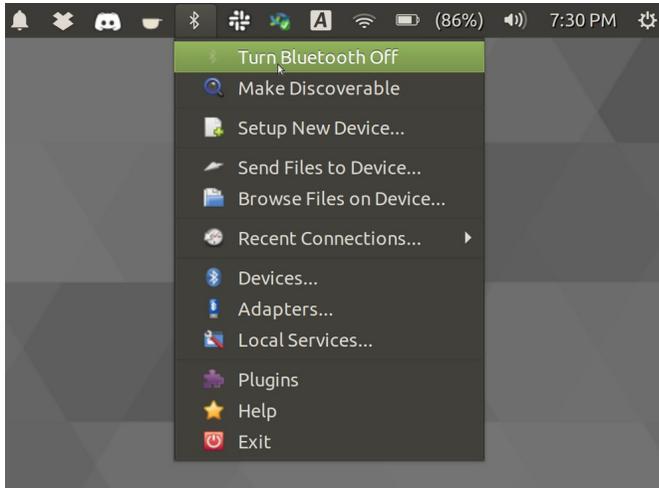
2. Adjust Screen Brightness

A laptop's biggest battery use is typically in powering the LCD screen. The brighter the screen, the more power is consumed. On some models, reducing backlight brightness from 100% to about 50% or even 30% provides enough illumination to see the screen comfortably except when outdoors, and dramatically improves battery life. That adjustment is usually controlled by hardware keys on your keyboard. If you can find a brightness setting that allows you to easily read the screen, but no brighter, then you'll extend your on-battery time for sure. You'll find the software-based brightness adjustment on the *On AC Power* tab. Its setting applies to both when you are on AC (mains) power and when you are on battery. However, if you also choose *Reduce backlight brightness* on the *On Battery Power* tab, then when using battery power, your display is actually adjusted to 50% of the display brightness you choose.



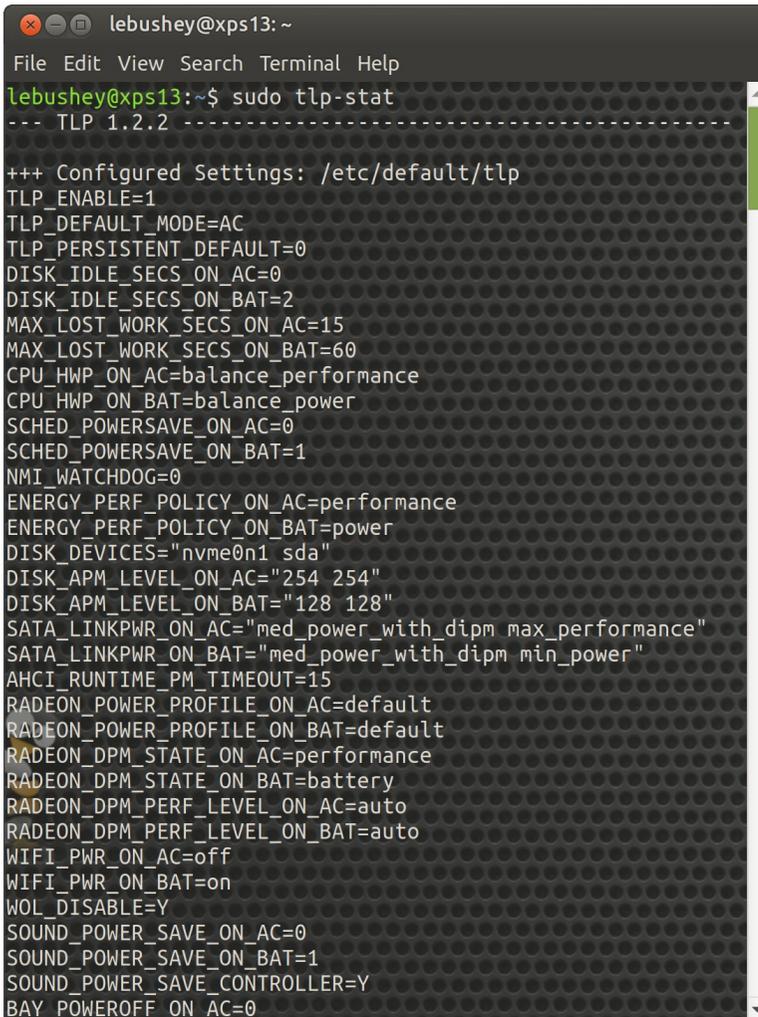
3. Turn Off What You Don't Use

Don't use a Bluetooth mouse, keyboard or headphones? Turn off your Bluetooth adapter by clicking on the Bluetooth icon in the top panel and selecting *Turn Bluetooth Off*. The computer uses power when searching for Bluetooth devices. Turn off similar settings for other devices or services (like WiFi) that you never or rarely use.



4. Use TLP

TLP is an advanced power management utility for Linux that can improve your battery life tremendously. TLP optimizes power settings automatically on startup and every time you change the power source. The Ubuntu MATE 16.04 release came with the TLP command-line utility pre-installed and pre-configured. If you are using a later release of Ubuntu MATE that doesn't install it by default, look in the Software Center for TLP. It'll likely be there, ready to install. The screenshot shows the default configuration of TLP on my Dell XPS 13.

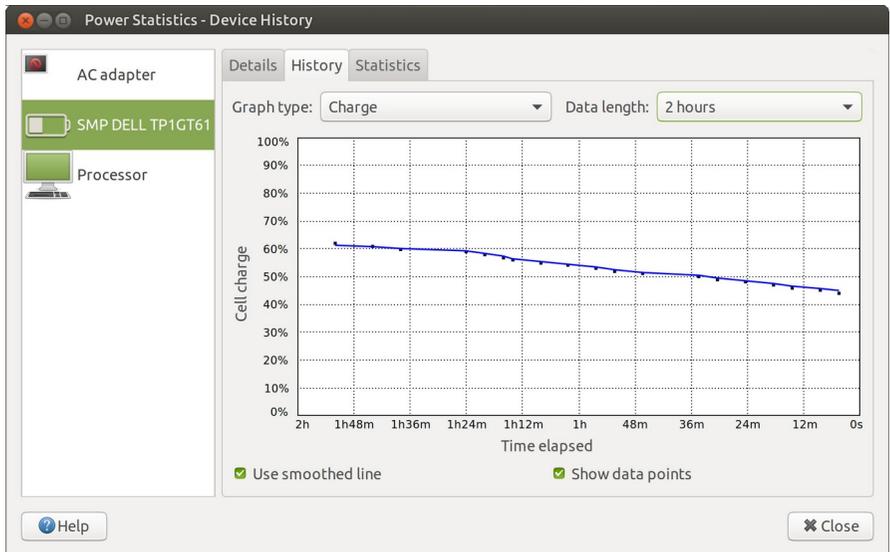
A terminal window titled 'lebushey@xps13: ~' showing the output of the 'sudo tlp-stat' command. The output displays the TLP version (1.2.2) and a list of configured settings for both AC and battery power. The settings include enabling TLP, setting default mode to AC, disk idle times, CPU governor, scheduler, NMI watchdog, energy performance policy, disk devices, APM levels, SATA link power, AHCI runtime PM timeout, Radeon power profile and DPM state, WiFi power, WOL disable, and sound power save settings.

```
lebushey@xps13: ~
File Edit View Search Terminal Help
lebushey@xps13:~$ sudo tlp-stat
--- TLP 1.2.2 -----
+++ Configured Settings: /etc/default/tlp
TLP_ENABLE=1
TLP_DEFAULT_MODE=AC
TLP_PERSISTENT_DEFAULT=0
DISK_IDLE_SECS_ON_AC=0
DISK_IDLE_SECS_ON_BAT=2
MAX_LOST_WORK_SECS_ON_AC=15
MAX_LOST_WORK_SECS_ON_BAT=60
CPU_HWP_ON_AC=balance_performance
CPU_HWP_ON_BAT=balance_power
SCHED_POWERSAVE_ON_AC=0
SCHED_POWERSAVE_ON_BAT=1
NMI_WATCHDOG=0
ENERGY_PERF_POLICY_ON_AC=performance
ENERGY_PERF_POLICY_ON_BAT=power
DISK_DEVICES="nvme0n1 sda"
DISK_APM_LEVEL_ON_AC="254 254"
DISK_APM_LEVEL_ON_BAT="128 128"
SATA_LINKPWR_ON_AC="med_power_with_dipm max_performance"
SATA_LINKPWR_ON_BAT="med_power_with_dipm min_power"
AHCI_RUNTIME_PM_TIMEOUT=15
RADEON_POWER_PROFILE_ON_AC=default
RADEON_POWER_PROFILE_ON_BAT=default
RADEON_DPM_STATE_ON_AC=performance
RADEON_DPM_STATE_ON_BAT=battery
RADEON_DPM_PERF_LEVEL_ON_AC=auto
RADEON_DPM_PERF_LEVEL_ON_BAT=auto
WIFI_PWR_ON_AC=off
WIFI_PWR_ON_BAT=on
WOL_DISABLE=Y
SOUND_POWER_SAVE_ON_AC=0
SOUND_POWER_SAVE_ON_BAT=1
SOUND_POWER_SAVE_CONTROLLER=Y
BAY_POWEROFF_ON_AC=0
```

5. Get a New Battery

Although today's battery technology is vastly superior to that of just a few years ago, batteries have a finite lifetime. They don't develop a "memory" when you "top up" their charge like they used to, but they do have a limited number of full charge cycles they can handle before they expire. If your laptop's battery will no longer hold a charge, it's likely time to replace it. Hopefully, your model allows you to do that. If not, you may be tethered to AC power until you can replace your computer.

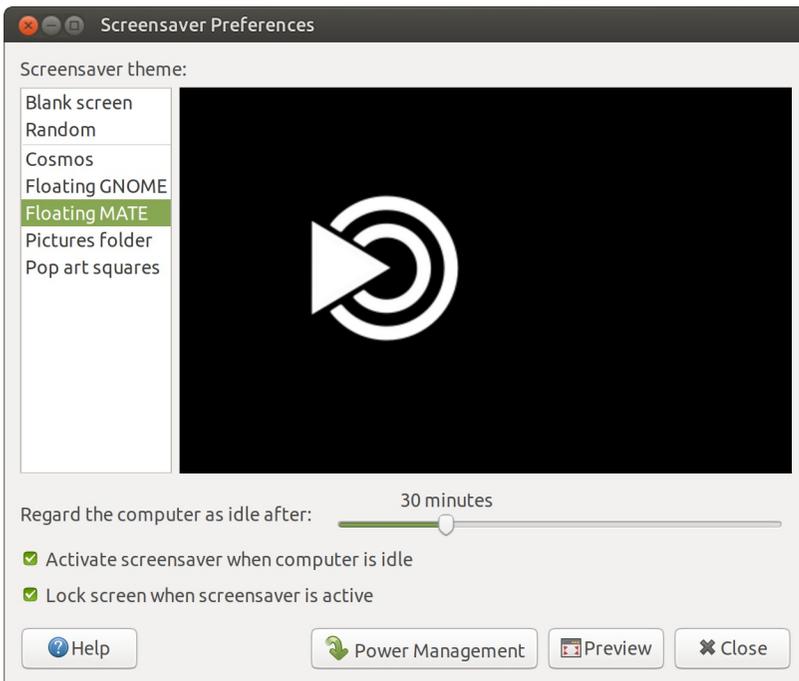
Ubuntu MATE comes pre-installed with a utility that lets you keep tabs on how your power is being used. You can find it at *Menu > System Tools > Power Statistics*.



Screensaver



The concept of a screensaver was important in the days when the cathode ray tube (CRT) was the only type of computer monitor available. In today's world, this software that originally prevented a permanent image from burning into your CRT screen is used mainly to provide an interesting animated image on the monitor when you step away. Although the power management settings can lock your screen, so too can the screensaver. It's your choice whether to use the screensaver or the power management settings to manage screen locking. If you don't care for an animated screensaver, you can choose to disable it altogether.



Adjusting the Screensaver Settings

The screensaver settings can be found at *Menu > Control Center > Screensaver*.

1. Choose from the available default images or choose to use the images you saved in your pictures folder as the screensaver. You can also choose a simple blank screen or random images.
2. The time setting that appears below the image preview allows you to control the amount of time it takes after your mouse and keyboard have been idle before the screensaver activates.
3. Uncheck *Activate screensaver when computer is idle* to completely disable the screensaver.

If you choose to use the screensaver, a check mark in the setting *Lock screen when screensaver is active* ensures that you must enter your password to dismiss the screensaver. Unchecking the box means that the screensaver will stop as soon as you move the mouse or type on the keyboard.

Adding Software To Ubuntu MATE

Installing Trusted Linux Applications



Almost every software package that is available and tested for Ubuntu MATE is available in the online software repositories (think: software catalog). The concept of software repositories is likely not all that familiar to long-time users switching from Windows since classic Windows users normally had to go to a brick-and-mortar store or go the software publisher's site online to purchase new software for the Microsoft operating system. For macOS users, however, the concept of the Apple App Store is similar in concept to the software repositories. Both contain trusted applications verified to run on their respective operating systems. Unlike most software in the App Store, the vast majority of Linux applications are neither proprietary nor expensive.

The software repositories for Ubuntu MATE are managed, maintained and updated by the distribution's maintainers and are variably referred to as "the software catalog," "the software library," "the software center," "software sources," or simply "software repositories." These repositories contain almost ALL of the full-featured, free and open source software that has been tested for installation on Ubuntu MATE and other Ubuntu derivatives. And they won't put spyware and viruses on your computer!

To install software on Ubuntu MATE, you normally use the Software Boutique. You can also use the Software Center or the Synaptic package manager. When a Linux user says "package" think "software package".

Software centers and package managers are examples of applications that are used to browse and retrieve software packages from software repositories. Ubuntu MATE conveniently gives you the option to install one when your search in the Software Boutique returns no results for an application that does what you want.

Trusted Sources



The Ubuntu software repositories include thousands of applications in hundreds of categories, suitable for just about any professional or recreational pursuit, and most are free of charge. When you use Ubuntu MATE, those applications, as well as security updates, driver updates, application updates, software upgrades, and operating system upgrades, are all available from trusted sources so you won't need to search the Internet for software. No more risking malware, junkware, or ransomware as a result of downloading from the wrong site! Ubuntu's software catalog is the ultimate in a trusted source!

There are several ways to obtain software from the software catalog. Ubuntu MATE's own Software Boutique is a carefully curated selection of the best-in-class applications from the Ubuntu repositories, chosen because they integrate well, complement Ubuntu MATE, and enable you to personalize your computing experience. When you first install Ubuntu MATE, the Software Boutique is the main graphical application you will use to install software.

Applications not available in the Software Boutique are available to explore in the full Ubuntu software catalog. You have full access to the entire Ubuntu library of software at any time using the command line or by enabling one or more of the software center applications from within the Software Boutique.

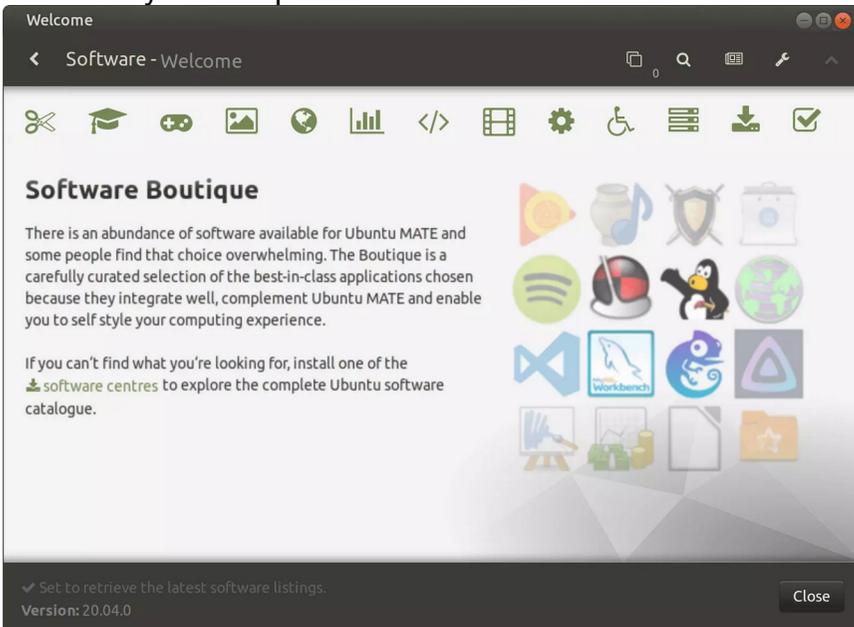
Note: Installing applications from the command line is discussed in more detail in the section on the MATE Terminal application, below.

Software Boutique



The Software Boutique's curated selection of the most popular applications lets you:

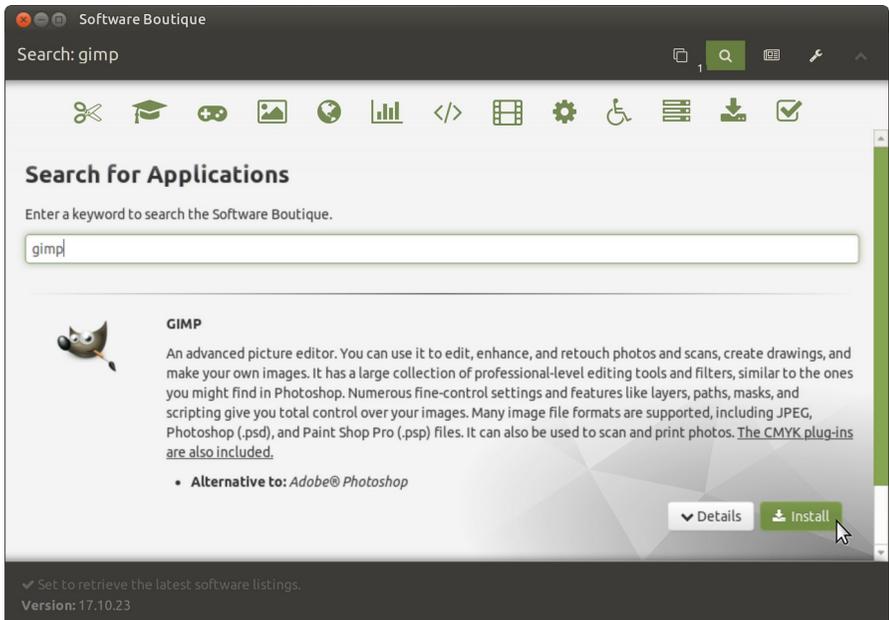
- Select from the list of Ubuntu MATE's recommended software, tested for the distribution.
- Use simple tools to manage software packages installed on your system.
- Install a software center or package manager with even more powerful ways to obtain additional software for your computer.



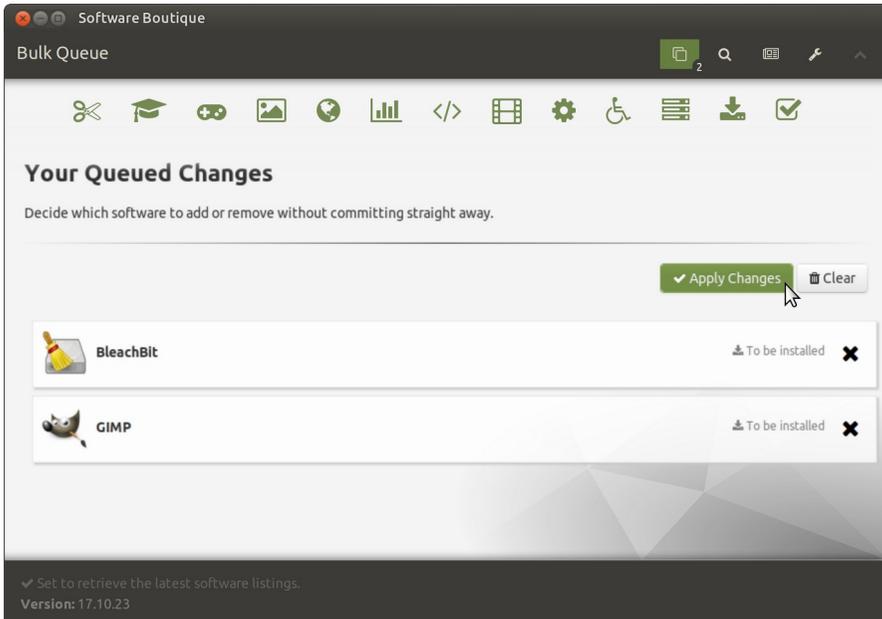
Installing applications using the Software Boutique

1. To launch the Software Boutique from the menus, choose *Menu > Administration > Software Boutique*.

2. One easy way to discover applications is to click one of the icons across the top of the window that represent categories and scroll through the list and read the description for more information.
3. If you know the name of the package you want to install, click the magnifying glass (search) icon at the top right to begin a search.



4. When you find an application you want to install, click the **Install** button. Your application will not be installed immediately. It will be added to the bulk queue.
5. To view the list of all applications you added to the queue, click the icon to the left of the search icon, the bulk queue icon.

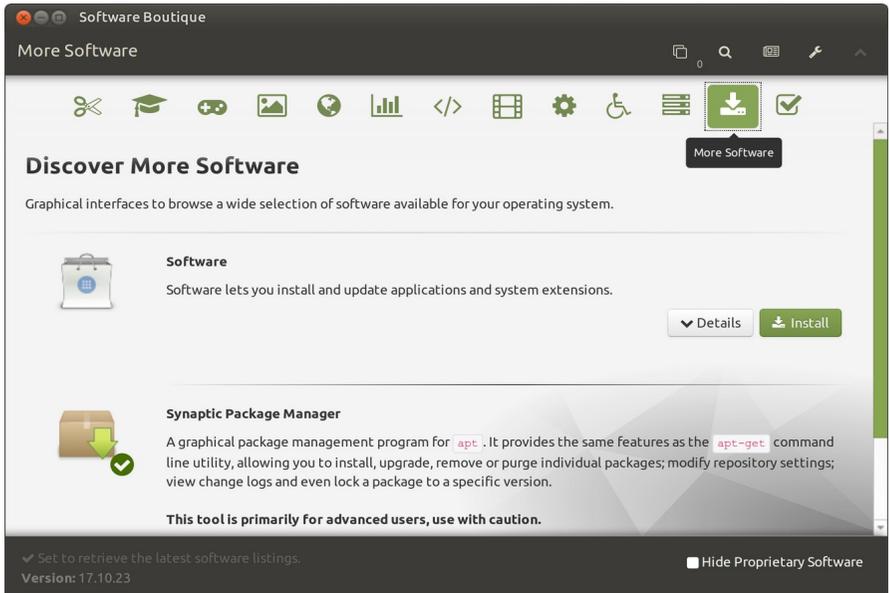


6. Click the **Apply Changes** button to begin installing the applications in the list.
7. You will be notified when the installations have completed and then you will be able to close the Software Boutique.

Installing Other Software Center Applications



If you don't find what you're looking for in the Software Boutique, you can easily install one of the available Software Centers to explore the complete Ubuntu software catalog. From within the Software Boutique, choose the "More Software" category using the icon at the top of the Software Boutique's main window.



The selection labeled simply "Software" installs a simple graphical application that lets you browse, install and update additional software applications and system extensions from the Ubuntu software repositories.

The "Synaptic Package Manager" is a more powerful graphical package management application that lets you install software onto your computer and manage the software that is already installed. It allows you to search, install, upgrade, and remove packages using the software repositories.

It also lets you add more software sources, modify repository settings, view change logs, and even lock a package to a specific version.

Ubuntu MATE always has security in mind. Regardless of how you choose to install software, to ensure your security, you are always asked for your password before anything can be installed.

These are some of the more popular software selections beyond those pre-installed with Ubuntu MATE:

- Barrier keyboard and mouse sharing application
- Codecs, libdvdcss2
- Dropbox for file sharing
- Gimp advanced image editor
- The Google Chrome browser
- Clementine music manager
- Minetest minecraft-inspired game
- Skype for Linux
- The Steam gaming platform
- The Software application
- Slack collaboration tool for teams
- Spotify for music
- Synaptic package manager
- Telegram messaging app
- uGet download manager
- VeraCrypt file and folder encryption
- VirtualBox 5.0 virtual machine

There is much more software available in the Ubuntu catalog. You can browse by the application's name or by function -- what the application does. Because the vast majority of the software available in the repositories is free, you can try applications and if you don't like them, or if they don't do what you expect them to do, you can uninstall them just as easily.

Note: New to the world of Open Source software? Wondering how to know which Linux application to choose? The AlternativeTo website <https://alternativeto.net> lets you find Linux applications that perform the same or similar functions as apps or software you currently use on Windows, macOS, Chrome OS, iPhone, iPad, Android, Web Apps, Online, and more.

Using The Applications

Ubuntu MATE Welcome



Developed by the Ubuntu MATE team, the Ubuntu MATE Welcome application is a utility that helps you to get comfortable with your new operating system. The first application you will see when you have installed Ubuntu MATE, Welcome guides you in a step-by-step fashion through post-install configuration such as installing drivers and adding language support.



Welcome introduces new users to the operating system, highlights key features of Ubuntu MATE, provides quick guidelines on getting started and displays your computer's system specifications.

Welcome also introduces users to the Ubuntu MATE Community with links to the community forums, social networks, the Ubuntu MATE store with branded products for sale, and details on donating to the project.

In addition, welcome includes access to the Software Boutique. It is exactly the same Software Boutique available from the menus and is provided here for convenience.

Getting Started: Updates & Extras

One of the first things you will want to do after you install Ubuntu MATE for the first time, or after upgrading to a new release, is to click on the **Getting Started** button in the Welcome application and choose **Updates & Extras**. This walks you through some common post-installation configuration tasks like checking for updates, adding support for audio and video, and adding Blu-Ray and DVD playback support.



It's organized in a step-by-step wizard so you don't miss anything -- and you can go back at any time to undo what you've done, or to find something you skipped. Don't be surprised when you are asked for your password. You are performing updates and installing software. Ubuntu MATE is just keeping you safe.

Clicking the **Next** button in the upper right of the window takes you to the next topic, *Drivers*.

Getting Started: Drivers

Most drivers for Linux distributions like Ubuntu MATE are already provided as part of the Linux kernel. The kernel is the foundational part of the operating system that makes Linux Linux. While a wide range of hardware is compatible with Ubuntu MATE, your computer hardware might include some components and peripherals that require proprietary drivers to function properly.

When you were installing Ubuntu MATE, you were asked if you wanted to download and use third-party software. If you ticked the checkbox to do that, clicking the **Additional Drivers** button reveals which, if any, proprietary drivers have already been installed and enabled for you. If you did not purchase your computer with Linux pre-installed, you may find that clicking **Install Firmware Package** is required to get some devices to work correctly.

The open source drivers for some proprietary devices, the ones provided in the kernel, are sometimes reverse-engineered. What that means is that the manufacturers of proprietary devices won't provide the specifications or the details of their own drivers to open source developers because they want to keep their "technology" secret. (Hence the term proprietary.) The developers of reverse-engineered open source drivers provided in Ubuntu MATE have made their best effort and have tested the functionality thoroughly, but sometimes there are features that could not be reproduced and are not provided in these drivers.

Sometimes, manufacturers of proprietary devices will provide Linux-compatible drivers that they develop themselves.

They won't let us know how their drivers work, so they never make it into the kernel, but where these proprietary drivers are available, they sometimes perform better than the reverse-engineered versions. With Ubuntu MATE, many of the proprietary drivers that have been made available are provided in the Welcome application, or in the Software & Updates application, available in the menu at *Menu > Administration > Software & Updates*. Usually, Ubuntu MATE automatically makes the best selection of open source or proprietary drivers for your hardware when it's installed, but you have the choice of which driver works best for you.

If you find that Wi-Fi, Bluetooth or other hardware does not work, and Welcome's **Additional Drivers** button did not find alternative drivers, you may need to research your device to find the appropriate driver. You'll find three methods of discovering your computer's specs in the section of this book entitled "Displaying Your System Information".

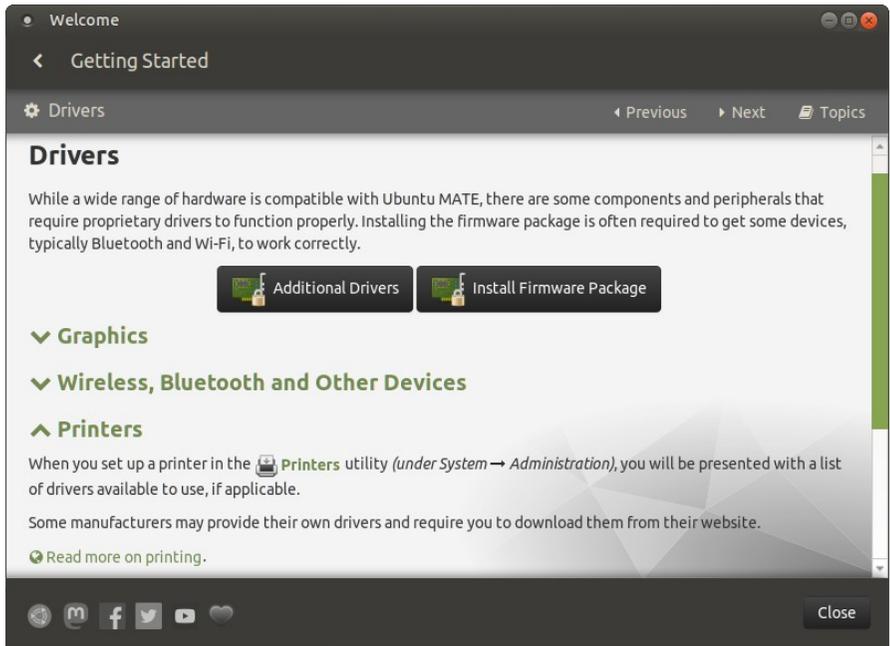
If there is nothing available in **Additional Drivers** to improve the performance of your hardware device, you may find something on the hardware manufacturer's site. You may need to install proprietary manufacturer drivers using the command line if you choose to use them. If you do, be careful to follow the installation instructions diligently. Before you install, make a system backup and understand how to uninstall just in case the proprietary drivers don't work. DO NOT simply search for drivers using drivers.com or other third-party sites. When you use third-party sources, there is no guarantee that you aren't getting something that will inject malware or corrupt your system. If you are unsure, or if you simply can't figure it out, you are better off asking about it in Ubuntu MATE forums and looking for someone else that has some advice or experience. Or you could just settle for the possibly lower performance of the reverse-engineered driver.

Of course, if you happen to be an expert in a device that doesn't have drivers in the kernel, the open source community would appreciate you sharing your expertise to help develop high-performance open source drivers for inclusion in the kernel.

Getting Started: Setting Up Printers

Setting up a printer is often as simple as plugging in its USB cable, or connecting it and your computer's Wi-Fi to your home wireless network.

To learn more about setting up a printer you can click on *Read more on printing*, in the *Printers* section at the bottom of the *Drivers* page in the Getting Started window, to discover Linux-compatible printers that can be detected and setup automatically. For even more on printing see the "Document Management" section, later in this book.

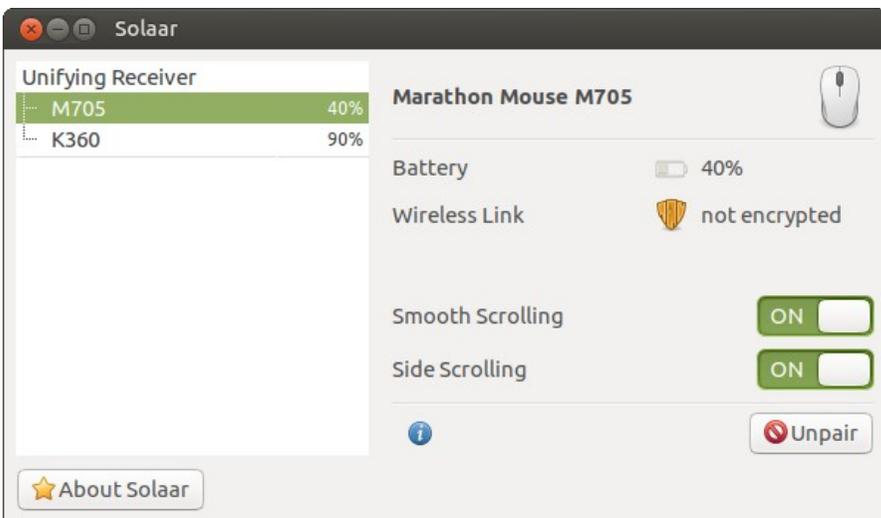


Getting Started: Additional Utilities

At the bottom of the *Drivers* page in the Getting Started window, in the *Printers* section, click on the *Software Utilities for Peripherals* section. You will find a selection of helpful applications that you can install from the Ubuntu repositories. Click the **Install** button below the description of the software utility you want to download and install.



One example that I have used is *Solaar*, which is a utility for pairing and unpairing Logitech Unifying Receivers with Logitech peripherals like mice and keyboards.



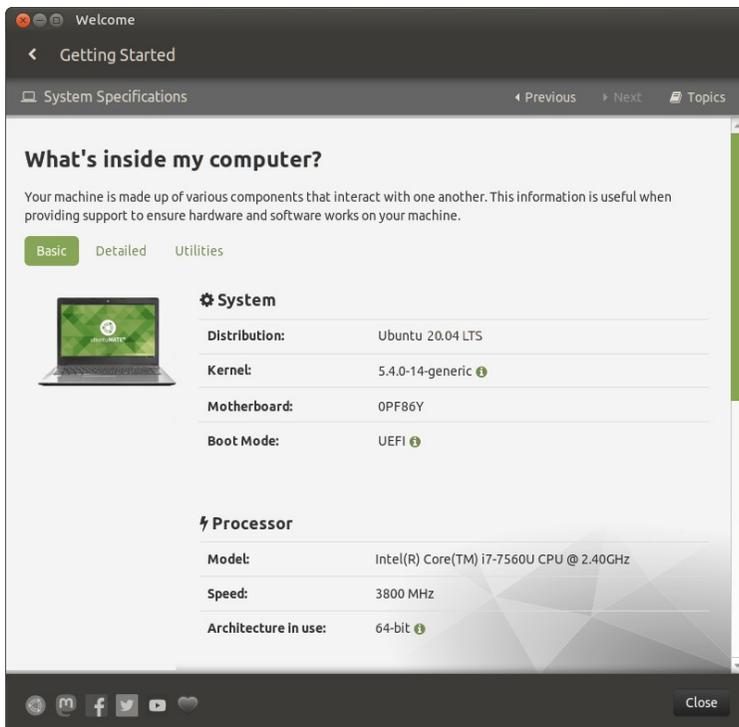
Displaying Your System Information

Getting Started: System Specifications

When you move to a new operating system, whether it's Windows, macOS or Ubuntu MATE that's new to you, it's sometimes difficult to find what you are looking for -- at first. Take finding a list of your system hardware for example. In classic Windows, if you wanted a graphical display of the specs for your computer, you right-clicked on the **My Computer** desktop icon and selected *Properties*. With Windows 10, you click the Windows logo in the taskbar, then select *Settings > System > About*. Neither is likely to be very intuitive if you have only ever used a Mac.

On Apple's macOS, you select **About This Mac** from the Apple logo menu to get a dialog box with selections to display at least some of your computer's specifications.

Linux, too, has graphical tools to display information about your computer's hardware.



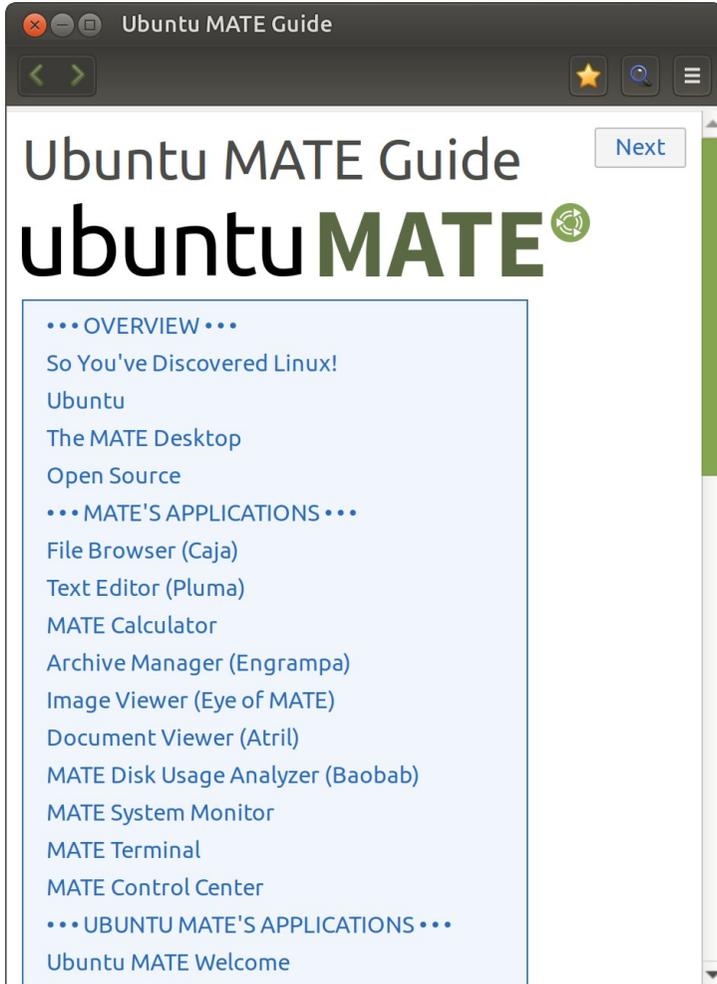
Ubuntu MATE provides system specifications in the Welcome application. From the menu, select *Menu > Welcome > Getting Started > System Specifications*.

This graphical method presents a nice browseable list of information, but with a terminal and a few commands, you can really dig under the hood of your Ubuntu MATE computer's hardware. See the section on the MATE Terminal later in this book for details on how to use the command line to reveal additional system information stored in text files on your hard drive.

The Ubuntu MATE Guide



The Ubuntu MATE Guide, found in the Ubuntu MATE menu at *Menu > Accessories > Ubuntu MATE Guide*, is for users needing a little extra help while learning to use Ubuntu MATE.



Note: The Ubuntu MATE Guide was written by the author of this book, so don't be surprised that the content looks familiar!

The Ubuntu MATE Guide doesn't attempt to exhaustively cover every feature of the operating system. It has been created for you and other computer users like you who want an always-available reference, right there in the operating system, to help you to learn about Ubuntu MATE. It can help you to build your confidence and competence in using Ubuntu MATE and its applications while you use them to get things done.

Searching For Help

Scrolling through the guide and jumping from topic to topic is fine if you want to read the Ubuntu MATE Guide like a manual. If you are looking for help on a particular topic, clicking the blue magnifying glass icon in the upper right corner of the help window opens a search tool. Type what you want to search for into the search box and press **Enter** to see a list of topics related to your search.

Accessibility Software



Accessibility, also referenced as "Assistive Technology" or "Universal Access," is a key priority for Ubuntu MATE. When computer access is shared within a household or business and where individual needs differ, Ubuntu MATE is an excellent solution.

Preference settings for basic accessibility features are found in the Control Center at *Menu > Control Center > Assistive Technology*. From there you can check the box to enable assistive applications, change which visual and mobility applications are used by default, and even change whether they are started automatically when your computer starts up. From here you can also modify your keyboard (sticky keys, slow keys, bounce keys) and mouse (locate pointer, acceleration, sensitivity, drag & drop, double-click timeout) accessibility settings. You can even enable an on-screen keyboard if you need it.



Ubuntu MATE has many keyboard shortcuts that, by pressing a combination of keys, help you do things that normally require a mouse, trackpad, or another input device that might also require sight or muscular range of motion not possible for some computer users requiring accessibility.

For some of these keyboard shortcuts, Ubuntu MATE makes use of a special meta key, the "Super" key, available on most computer keyboards. The Super key can be used to activate the menus/launchers and many keyboard shortcuts that include the Super key. Appendix A lists some common ones.

Note: On computer keyboards designed for use with the Windows operating system, the Super key is labeled with the "Windows" logo. On keyboards designed for use with Apple's operating system, the Super key is identified as the "Command" key. On computers designed for Linux, the Super key may be labeled with the Tux penguin logo (the Linux mascot), the Ubuntu logo, or perhaps even a blank square.

When you order a computer pre-installed with Linux from the manufacturer Dell, you will need to follow Dell's instructions on how to enable the Super key. Details are available from Dell's support website in a knowledge base article entitled, "*How to enable the Ubuntu super key on Dell OEM Ubuntu installations.*"

Enabling Accessibility at Startup

When Ubuntu MATE is first installed as your computer's operating system, it is pre-configured so that both Orca, the screen reader, and Onboard, the on-screen keyboard, are already installed and running in the background. All you need to do to use them is press the keyboard shortcut detailed in each section below to turn the feature on. You use the same shortcut to turn each application off again.

If you want to use these features at the login screen, before Ubuntu MATE even starts, the accessibility icon in the upper right of the screen lets you toggle on and off Orca and Onboard. You can also use Orca's keyboard shortcut <Alt> + <Super> + S to enable the screen reader to assist in the login process.

Orca Screen Reader



The Orca screen reader is a free, open source, flexible, and extensible screen reader that provides you with access to the graphical desktop via user-customizable combinations of speech and/or braille. It is pre-installed in Ubuntu MATE for blind and low vision users. At the login screen, and after Ubuntu MATE starts, you toggle the screen reader off and on by pressing <Alt> + <Super> + S.

With some other Linux distributions, getting Orca to work can be tricky. With Ubuntu MATE all the setup is done for you. It also works nicely with pretty much all of the pre-installed software, including the LibreOffice office suite and the Firefox web browser.

For complete information about using and configuring the Orca screen reader, refer to the website <https://help.gnome.org/users/orca/stable/>.

The Orca documentation on the website occasionally refers to the "Orca Modifier" key. The key that Orca uses by default as the "Orca Modifier" depends on whether you are using Orca's "Laptop" keyboard layout or its "Desktop" keyboard layout

Orca Modifier:

If you are using Orca's "Laptop" layout, the default Orca Modifier will be <CapsLock>.

If you are using Orca's "Desktop" layout, for the Orca Modifier you can use either the normal <Insert> key or the <KeyPad> + <Insert>. On US keyboards, <KeyPad> + <Insert> is the same key as the 0 (zero) on the numeric keypad.

Orca Help:

- To view Orca's documentation, press <F1>.
- To hear a list of Orca's shortcuts, press <F2>.
- To hear a list of Orca's shortcuts for the current application, press <F3>.

You can use the "Orca Modifier" key to get to Orca's help. Press <Orca Modifier> + H to enter "learn mode".

To learn more about how to use Orca to read documents and websites, see the web page:

<https://help.gnome.org/users/orca/stable/#reading>.

You may find that the screen reader speaks too slowly or too quickly for you. You can adjust the rate at which Orca speaks, and make other adjustments as well, in Orca Preferences. To get to the Orca Preferences screens, press <Orca Modifier> + <Spacebar>. If you find yourself needing to adjust the speed frequently, you might want to bind (map) the "increase the rate" and "decrease the rate" commands to specific keys. That way you can more easily make these adjustments. To review (and setup) the keyboard shortcuts and commands that Orca uses, you will want to refer to the documentation on key bindings on this web page: https://help.gnome.org/users/orca/stable/howto_key_bindings.html.en.

This is just a small sampling of the documentation that is available to you on the Orca site. Browse around. Discover what this powerful tool can do!

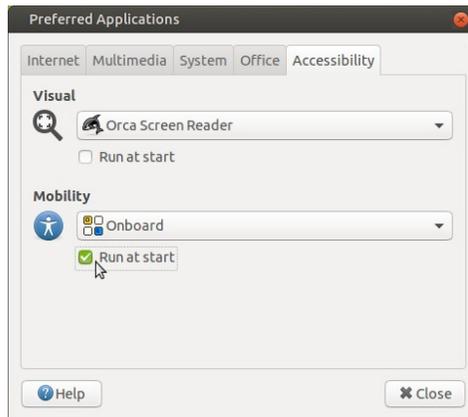
Onboard On-Screen Keyboard



Onboard is the name of Ubuntu MATE's on-screen keyboard. Onboard is pre-installed in Ubuntu MATE and is available at the press of a few keys for anyone requiring the use of an on-screen keyboard in place of a traditional hardware keyboard. In addition to supporting mobility-impaired users, Onboard provides support for tablet and touch-screen computers. To turn Onboard off or on again from the hardware keyboard, press <Alt> + <Super> + K.

You can also enable Onboard so that it is available on-screen right at startup:

1. Open the Assistive Technologies Preference tool, found at *Menu > Control Center > Assistive Technology*.
2. Check the box labeled *Enable assistive technologies*.
3. Click the **Preferred Applications** button.
4. Select the *Accessibility* tab.
5. Check the box labeled *Run at start* and click **Close**.



Note: More settings and preferences for Onboard are listed in the Control Panel in the *Personal* section as "Onboard Settings".

Screen Magnifier



If you are a low vision user and you require screen magnification, Magnus, found in the Ubuntu MATE menus at *Menu > Universal Access > Magnus*, is a very simple desktop magnifier you can use. It shows the area around the mouse pointer in a separate window. You can select the level of magnification that works for you between two, three, four, and five times. The screen magnifier is also useful for accurate graphical design or detail work. To turn on or off the screen magnifier, press <Alt> + <Super> + M.



Mobility Features



The Control Panel provides preferences for Mouse and Keyboard that each offer settings that will be of interest to users with mobility impairments.

Mouse Preferences provide the ability to adjust the *Pointer Speed* sliders until the pointer motion is comfortable for you. A tab is provided for mouse and touchpad with sliders for each device. You can set different pointer speed for each type of device. For example, you can have one speed setting for a laptop touchpad and another for a mouse. Sometimes the most comfortable settings for one type of device are not the best for another. Note that the *Touchpad* tab only appears if your system has a touchpad.

Keyboard Preferences provides several tabs that have settings allowing you to adjust the following:

- Keyboard navigation -- Use applications and the desktop without a mouse.
- Turn on bounce keys -- Ignore quickly-repeated key presses of the same key.
- Turn on slow keys -- Have a delay between a key being pressed and that letter appearing on the screen.
- Turn on sticky keys -- Type keyboard shortcuts one key at a time rather than having to hold down all of the keys at once.

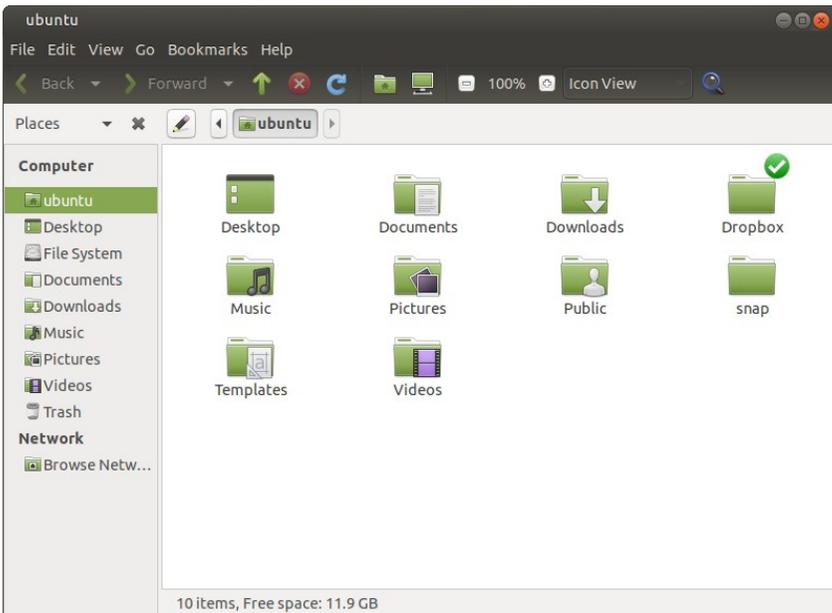
MATE's Applications

In Ubuntu MATE, the software you might expect to find on any computer is provided by the MATE desktop. This section describes the most commonly used applications.

File Browser (Caja)



The Caja application, found in the Ubuntu MATE menus at *Menu > System Tools > Caja*, lets you organize and manage files and folders, both on your computer and on a home network. In Ubuntu MATE many things are files, such as word processor documents, spreadsheets, photos, movies, and music. Caja lets you manage them all.



Using the file manager you can do the following:

- Create documents and folders.
- Display files and folders.
- Search for and manage your files.
- Run scripts and launch applications.

- Open special locations on your computer.
- Write data to a CD or DVD.
- Install and remove fonts.

Like file managers in other operating systems (Apple calls their file manager "the finder") Caja lets you organize your files into folders. Folders can contain files and even other folders. Some people find that organizing files into folders can help them locate their files more easily.

Ubuntu MATE allows more than one user to login to the same computer. Each user has a personal Home folder that is labeled with the username chosen during setup. In the illustration, the username and the name of the personal Home folder is *ubuntu*. The folder that is actually labeled "home" contains the personal Home folders for each user setup on your computer. Normally, there is just one user (you) and so the home folder contains only your own personal Home folder.

By default, your personal Home folder contains several folders (sub-folders) and any files that you create. Viewed from the Caja file manager, Desktop is just another folder in your personal Home folder that can, itself, contain folders and files.

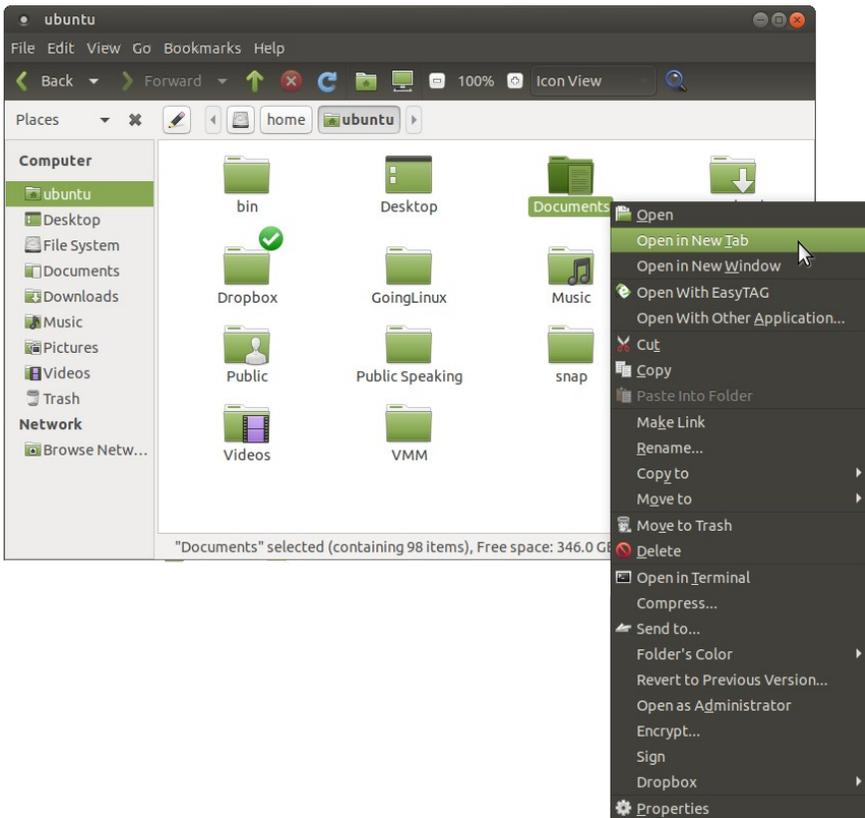
When viewing the desktop showing your background wallpaper, Desktop can display special icons that allow easy access to your personal Home folder, Trash, and removable media such as CDs, USB flash drives, and (if your computer is old enough) floppy disks. See how to enable these special desktop icons in the section of this book entitled "Create System Icons Using MATE Tweak".

The Caja file manager is always running while you are using the MATE desktop environment. To open a new Caja window, double-click on an icon on the desktop such as *Home* or *Computer*, or choose the application from the menu at *Menu > System Tools > Caja*.

In addition to the folder contents, the browser window displays a toolbar with common actions and locations, a location bar that shows the current location in the hierarchy of folders, and a sidebar that can hold different kinds of information.

The file manager window is a file browser of sorts. Double-clicking the icon for a file opens the file in the Caja software application that lets you view and/or edit the document.

Opening a folder by double-clicking on its icon updates the current file manager window to show the contents of the opened folder. You can also open a folder by right-clicking on that folder, then choosing between *Open* (this is the same as simply double-clicking the folder), *Open in a New Tab*, or *Open in a New Window*.

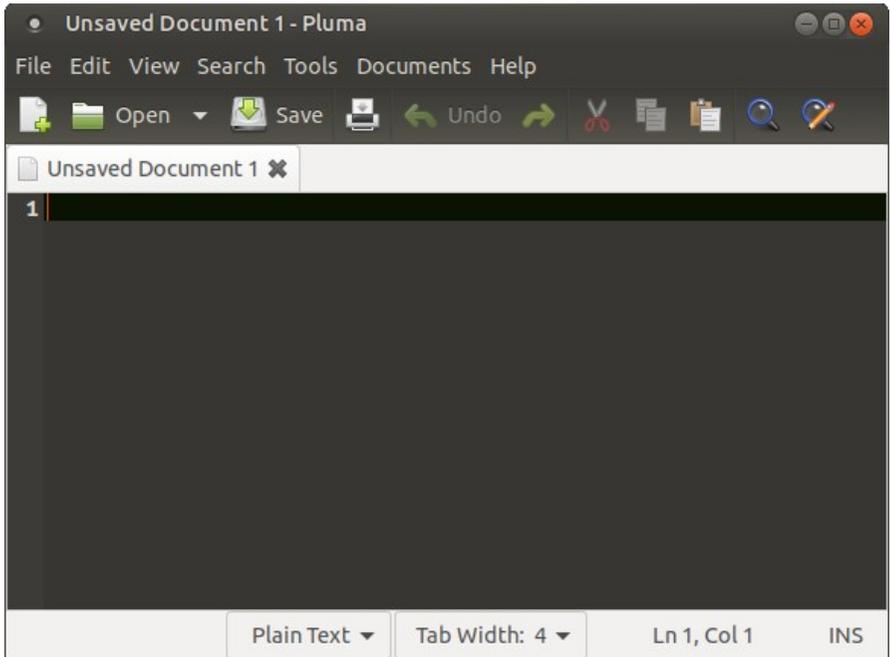


Note: For more information about how you can use Caja and the various preferences that you can set, see the Caja manual (Desktop User Guide) by pressing <F1> while Caja is open.

Text Editor (Pluma)



The Pluma text editor, found in the Ubuntu MATE menus at *Menu > Accessories > Pluma Text Editor*, enables you to create and edit text files. The aim of Pluma is to be a simple and easy to use text editor. You can enable more powerful features with different plug-ins, allowing a variety of tasks related to text-editing.



The Pluma window contains the following elements:

Menubar

The menus on the menubar contain all of the commands you need to work with files in Pluma. Note, if you have chosen a layout that uses the Global Menu, the menubar items will be displayed in the Global Menu rather than within the Pluma window.

Toolbar

The toolbar contains icon buttons that represent a subset of the commands that you can access from the menubar.

Display area

The display area displays the text of the file you are editing.

Status Bar

The status bar is at the bottom of the window and displays information about how you are using Pluma. The status bar display includes the following information:

Cursor position is the line number and column number where the cursor is located.

Edit mode is changed using the <Insert> key on your keyboard. If the editor is in insert mode, the status bar contains the text "INS." If the editor is in overwrite mode, the status bar contains the text "OVR."

Side Pane

By default, the side pane is not shown. To show it, choose *View > Side Pane*.

The side pane displays a list of open documents and other information depending on which plugins are enabled.

Bottom Pane

The bottom pane is used by programming tools such as the Python Console plugin to display output.

By default, the bottom pane is not shown. To show it, choose *View > Bottom Pane*.

When you right-click in the Pluma window, a popup menu appears containing the most common text editing commands.

Like other MATE applications, actions in Pluma can be performed with the menu, with the toolbar, or with keyboard shortcuts. See the appendix for a list of common keyboard shortcuts.

Creating a New Document

To create a new document, choose *File > New*. Pluma displays a new blank document in the display area.

Opening a File

If you have the Caja file manager open and you can see your file, simply double-click it, otherwise, to open a file from within Pluma, choose *File > Open* to display the "Open File" dialog. Navigate to the folder that contains your file, then select the file that you want to open and click **Open**. The file is displayed in the Pluma window. You can open multiple files in Pluma. The application adds a tab for each open file to the window above the display area.

Saving a File

To save changes to a file you have opened and/or already saved, choose *File > Save*.

To save a new file or to save an existing file under a new filename, choose *File > Save As*. Enter a name for your file and click **Save**.

To save all of the files that are currently open in Pluma, choose *Documents > Save All*.

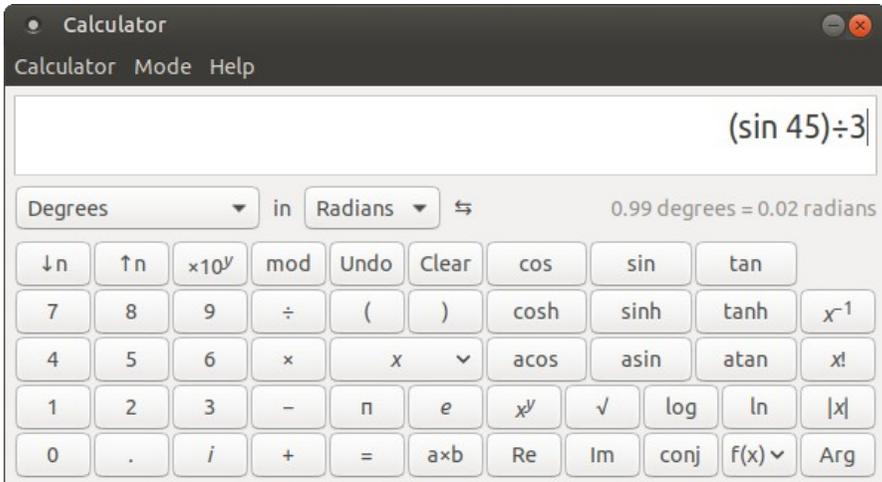
To close all of the files that are currently open in Pluma, choose *Documents > Close All*. If you have any open files with unsaved edits, you will be prompted to save them before that file is closed.

Note: For help topics on this application, see the Pluma manual by pressing <F1> while Pluma is open.

MATE Calculator



The Calculator application can be found in the Ubuntu MATE menus at *Menu > Accessories > MATE Calculator*. It is a calculator with ordinary notation/reverse polish notation (RPN), a formula entry mode, different number bases (DEC, HEX, OCT, BIN) and different units of angular measure (DEG, RAD, GRAD). It supports quad-precision floating point and 112-bit binary arithmetic. MATE Calculator has four modes: Basic, Advanced, Financial and Programming. The Advanced mode is shown, below.



Note: For help topics on this application, see the Calculator manual by pressing <F1> while MATE Calculator is open. Topics include user interface, equations, number formats, conversions and financial calculations.

Archive Manager (Engrampa)



You can use the Engrampa Archive Manager application, found in the Ubuntu MATE menus at *Menu > Accessories > Engrampa Archive Manager*, to create, view, modify, or unpack an archive. An archive is a file that acts as a container for other files. Sometimes referred to generically as "zipped files" or "compressed files," an archive can contain many files, folders, and subfolders, usually in compressed form.

The most common archive format on UNIX and Linux systems is the tar archive, compressed with a file name ending in "tar.gz" or "tar.bz." The most common archive format on Windows systems is the archive created with applications that generate archives with a file name ending with the ".zip" extension. Archive Manager supports all of these formats, and if you have the appropriate command-line tools installed, it will support many more.

The Archive Manager application window includes the following elements:

Menubar

The menus on the menubar contain all of the commands you need to work with files in Archive Manager. Note that if you have chosen a layout that uses the Global Menu, the menubar items will be displayed in the Global Menu rather than within the Archive Manager window.

Toolbar

The toolbar contains icon buttons that represent a subset of the commands that you can access from the menubar.

Using Archive Manager

When you use Archive Manager to work with an archive, all your changes are saved immediately. For example, if you delete a file from an archive, Archive Manager deletes the file as soon as you click **OK**. This behavior is different to that of most applications, which save the changes only when you quit the application or select *Save* in the menu.

To create a new archive file, you can choose *Open* from the menu, click and drag one or more files or folders from the Caja File Browser window into the Archive Manager window, or right-click one or more files in Caja and selecting *Compress* from the menu.

To expand a compressed file's contents, you start by opening the archive by double-clicking it in the File Browser. Next, you can choose one or more files in the Archive Manager window and either choose *Extract* from the menu or drag them to the desktop or other location where you want the files to end up.

If an archive is very large, or you have a slow system, some archive actions can take significant time. To abort the current action, press <Esc>. Alternatively, choose *View > Stop*, or click **Stop** in the toolbar.

Note: For help topics on this application, see the Archive Manager manual by pressing <F1> while Archive Manager is open.

Image Viewer (Eye of MATE)



The Eye of MATE Image Viewer application, found in the Ubuntu MATE menus at *Menu > Graphics > Eye of MATE Image Viewer*, enables you to view single image files, as well as large image collections.

The Image Viewer can open a wide variety of image file formats including animated graphics (ANI), bitmaps (BMP, PNG, ICO, PCX, WBMP, XBM, XPM), vector graphics (SVG), and other popular formats like JPEG, GIF, TIFF, and more. Files can be saved in BMP, ICO, JPEG and PNG formats.

The Image Viewer window contains the elements listed in the sections below.

Menubar

The menus on the menubar contain all of the commands you need to work with images in Image Viewer. Note, if you have chosen a layout that uses the Global Menu, the menubar will be displayed in the Global Menu rather than in the Image Viewer window.

Toolbar

The toolbar contains icon buttons that represent a subset of the commands that you can access from the menubar.

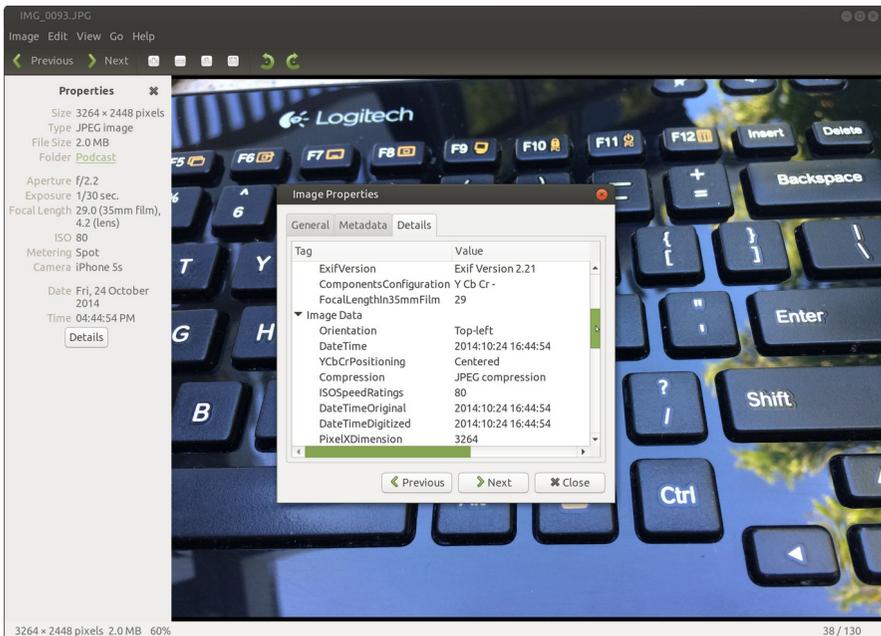
Using Image Viewer

Image Viewer has features to help you view your images. You can zoom in and out or view the image full-screen. You can rotate and flip the image you are viewing.

The collection view allows you to view and edit large image collections. In this view, image operations can be applied to all selected images at once.

Image Viewer has special support for digital camera pictures and displays EXIF metadata recorded with the image. All modifications made in JPEG images are lossless. That is, saving rotated and flipped JPEG images will not recompress the image. Beside this, all available metadata (like EXIF) will be preserved and updated accordingly.

For help topics on this application, see the Image Viewer manual by pressing <F1> while the Image Viewer is open.



Note: For help topics on this application, see the Image Viewer manual by pressing <F1> while Image Viewer is open.

Document Viewer (Atril)



The Atril Document Viewer, found in the Ubuntu MATE menus at *Menu > Office > Atril Document Viewer*, enables you to view documents of various formats like Portable Document Format (PDF) files, PostScript files, and e-book (EPUB) files.

You can open the Atril Document Viewer from the menus, or more simply by double-clicking on the file you want to open in the Caja file manager. To zoom in and out, you can use the keyboard shortcuts $\langle \text{Ctrl} \rangle + +$ (the plus key) and $\langle \text{Ctrl} \rangle + -$ (the minus key). You can also hold the $\langle \text{Ctrl} \rangle$ key while scrolling the mouse wheel, or you can use the on-screen button to select from some preset zoom levels including "Fit Page Width" and "Best Fit" among others.

Navigate through a document by clicking the **Next** and **Previous** buttons or by using the *Go* menu. You can jump to a particular page by entering the page number in the text box on the toolbar, then press the $\langle \text{Enter} \rangle$ key on your keyboard.



Menubar

The menus on the menubar contain all of the commands you need to work with documents in Atril. Note, if you have chosen a layout that uses the Global Menu, the menubar items will be displayed in the Global Menu rather than within the Atril window.

Toolbar

The toolbar contains icon buttons that let you navigate the document by page and change the zoom factor.

Left Navigation Pane (Side Pane)

To view bookmarks or pages, choose *View > Side Pane* or toggle the Side Pane on or off by pressing <F9> on your keyboard. Depending on the type of file you are opening, the left pane of the Atril window may show an index, bookmarks, an outline, or annotations. Clicking the header lets you switch between them. You can navigate the document page by page, by scrolling with your mouse, or by using the side pane to jump to a topic.

Password-Protected Documents

The author of a PDF document can use the following password levels to protect a document:

- User password that allows others only to read the document.
- Master password that allows others to perform additional actions, such as print the document.

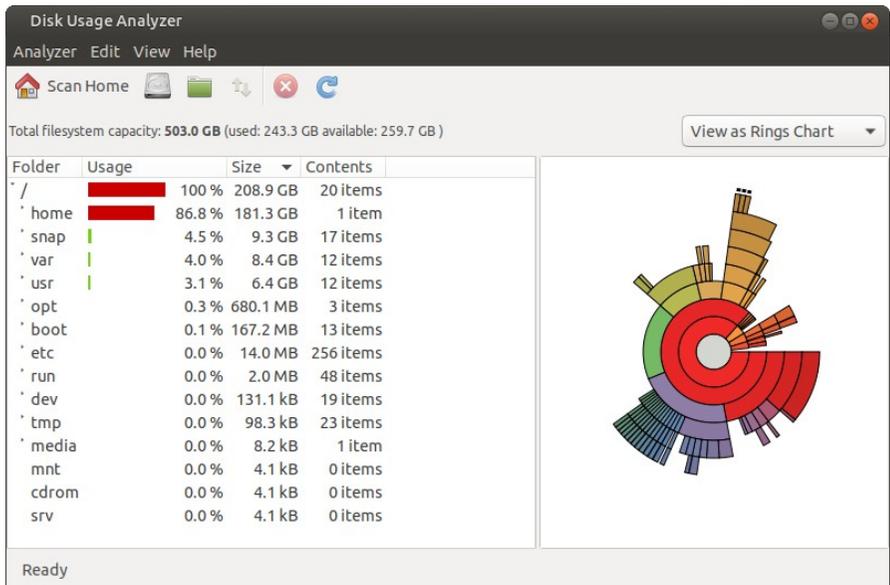
When you try to open a password-protected document, Atril Document Viewer prompts you for a password. Type either the user password or the master password in the *Enter document password* text box, then click **Open Document**.

Note: For help topics on this application, see the Atril Document Viewer manual by pressing <F1> while Document Viewer is open. Topics include printing, copying, and working with password-protected documents.

MATE Disk Usage Analyzer (Baobab)



The MATE Disk Usage Analyzer, found at *Menu > System Tools > MATE Disk Usage Analyzer*, is a graphical tool for analyzing how your storage media is being used. It can scan the file system on a disk or in a specific folder. It provides a graphical treemap window for each selected disk or folder.



Menubar

The menus on the menubar contain all of the commands you need to work with the disks and file system in Disk Usage Analyzer. Note, if you have chosen a layout that uses the Global Menu, the menubar items will be displayed in the Global Menu rather than within the Analyzer's window.

Toolbar

The toolbar contains icon buttons that represent a subset of the commands that you can access from the menubar.

Note: For help topics on this application, see the MATE Disk Usage Analyzer manual by pressing <F1> while Disk Usage Analyzer is open.

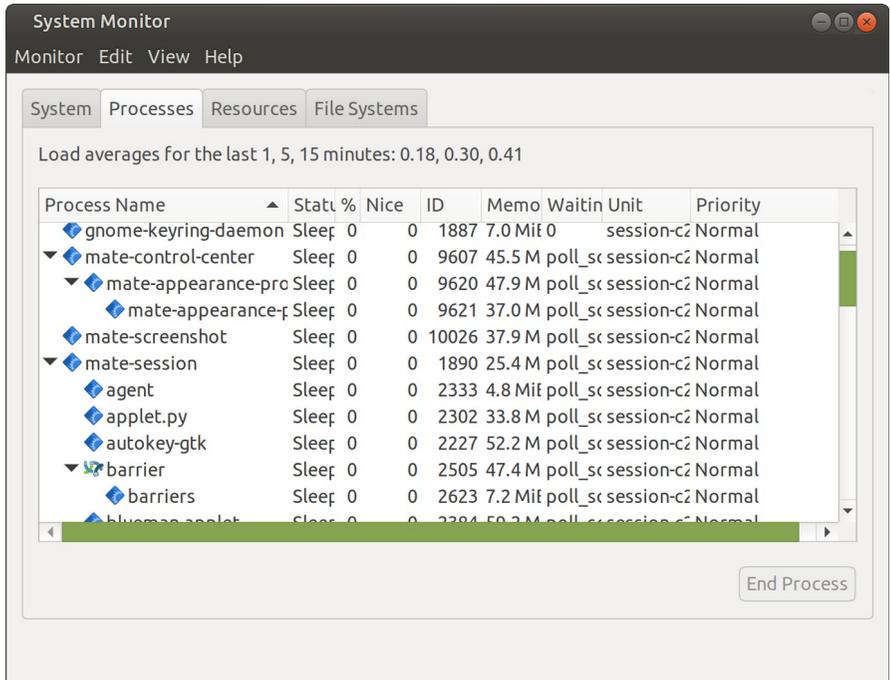
MATE System Monitor



The MATE System Monitor, found in the Ubuntu MATE menus at Menu > System Tools > MATE System Monitor, enables you to display basic system information and monitor system processes, usage of system resources, and file system usage. You can also use MATE System Monitor to modify the behavior of your system.



The *System* tab shows information about the computer's hardware and software, as shown above. The *Processes* tab, shown below, shows information about active processes (applications, utilities, etc.) and how they relate to each other. You can stop, end, or kill a process or otherwise control active processes.



The *Resources* tab displays current CPU, memory, and network usage. The *File Systems* tab lists all mounted file systems and basic information about each.

Note: For help topics on this application, see the MATE System Monitor manual by pressing <F1> while MATE System Monitor is open.

MATE Terminal



MATE Terminal is a terminal emulation application that can be found in the Ubuntu MATE menus at *Menu > System Tools > MATE Terminal*. It provides access to the powerful Linux command line and interprets and executes the commands that you type at a command-line prompt.

You don't need to know how to use the command line to use today's modern Linux distributions, but understanding the basics can help you to simplify some common tasks by using single-line commands, automating repetitive tasks with simple scripts, and using additional features not available in graphical versions of applications.

Although the MATE Terminal can be used to launch graphical applications by simply typing the name of the application and pressing the **Enter** key, you normally use it to run applications that are not designed to be run as graphical applications.

These text-based applications, known as command-line programs, can be used to create scripts and other programs, get and install additional software from the software catalog, check the status of your computer's hardware and installed software, and many, many other things. In fact, years before graphical applications were made popular for computing, computer users checked email, communicated with other computers, shared files, photos, and programs, and even browsed early versions of the Internet from terminal applications very similar to the MATE Terminal.

Note: How to use terminal and command-line programs is a topic that has been explored in many books, so I won't go into more detail here. One popular and excellent book on this topic is "*The Linux Command Line: A Complete Introduction*" by William E. Shotts Jr.
<https://www.amazon.com/dp/ASIN/1593273894>

Another source of information on using the terminal is the *MATE Terminal* manual contained within the MATE Desktop User Guide. It's provided with Ubuntu MATE. To go there directly, open the MATE Terminal application from the menu, then press the <F1> key on your keyboard to open the manual.

Installing Applications Using the Command Line

As an example of how to use the command line, let's look at the apt application. It is a powerful command-line tool which can be used to install new software packages, upgrade existing software packages, update the package list index, and even upgrade the entire Ubuntu MATE system.

It's good practice to ensure that you have the latest changes made in the Ubuntu software repositories before installing software. The apt command can be used to update the index of available software packages that are on your computer. To do this, type the following in the terminal window:

```
sudo apt update
```

Note: When you use "sudo" you are telling Ubuntu MATE that you want to run the command as administrator, so for security purposes, you will be asked for your password the first time you use "sudo" in a terminal session.

Also note that what you type in the terminal is case-sensitive. "Install" is not the same as "install." As far as the terminal is concerned, they are two entirely different words.

Installing software using the apt tool is quite simple, provided you know the name of the application, and provided it is available in the software catalog. For example, to install the audio recording and editing application Audacity, type the following into a terminal window at the command prompt:

```
sudo apt install audacity
```

Uninstalling (removing) an application is just as easy. To remove the Audacity application installed in the previous example, type the following:

```
sudo apt remove audacity
```

Adding the "--purge" option to "apt remove" will remove the package configuration files as well. This may or may not do what you want, so use it with caution. Here's how that looks using our same example:

```
sudo apt remove --purge audacity
```

Over time, updated versions of packages currently installed on your computer may become available from the package repositories. To use the command line to upgrade the applications on your system, first update the package index:

```
sudo apt update
```

When that command has finished running, type the following to complete the upgrade:

```
sudo apt upgrade
```

In addition to installing applications from the Ubuntu catalog, you can use the command line to install "snap" applications from the catalog of applications provided by the snap store. Snaps are application packages for the Linux desktop, cloud, and IoT that are easy to install, secure, cross-platform, and self-contained. Since support for snap packages is included with Ubuntu MATE you can install from the snap store with a simple command. The specific command you'll need can be found within the application's listing in the snap store (snapcraft.io/store). For example, to install the version of Audacity available in the snap store, the command listed in the snap store is:

```
sudo snap install audacity
```

Simple, right? Since snap support is built-in to Ubuntu MATE, snap applications receive automatic updates just like everything else!

Displaying Your System Info Using The "lshw" Command

A graphical tool is great for a nicely-formatted overview of your system, but with a terminal and a few commands, you can really dig under the hood of your Ubuntu MATE computer's hardware. You can also use the command line to reveal additional information stored in text files on your hard drive.

Typing the "list hardware" command, *lshw*, at the command line without any switches or options to get a very detailed list. It needs to run as root (administrator), so you'll need to type "sudo" in front of the command.

The list this command generates seems to run on forever and is a little difficult to follow when it is simply displayed in the terminal. The command listed below runs *lshw* with the `-html` option to create an html file. Open it in a browser and you have a nice "web page" with all of your hardware specs.

```
sudo lshw -html>myhardware.html
```

When I ran it, this command detected and reported on my touch screen, attached USB storage drives, and even the micro-SD card on the phone I had charging on a USB port!

Displaying Your System Info Using The "inxi" Command

Possibly the easiest command to use in the terminal to get a full listing of your computer's system configuration information is the "inxi" command. To install "inxi", type use "apt", as we learned in a previous section:

```
sudo apt install inxi
```

Once the application is installed, to display your system information with a moderate amount of detail, as shown in the illustration below, simply type:

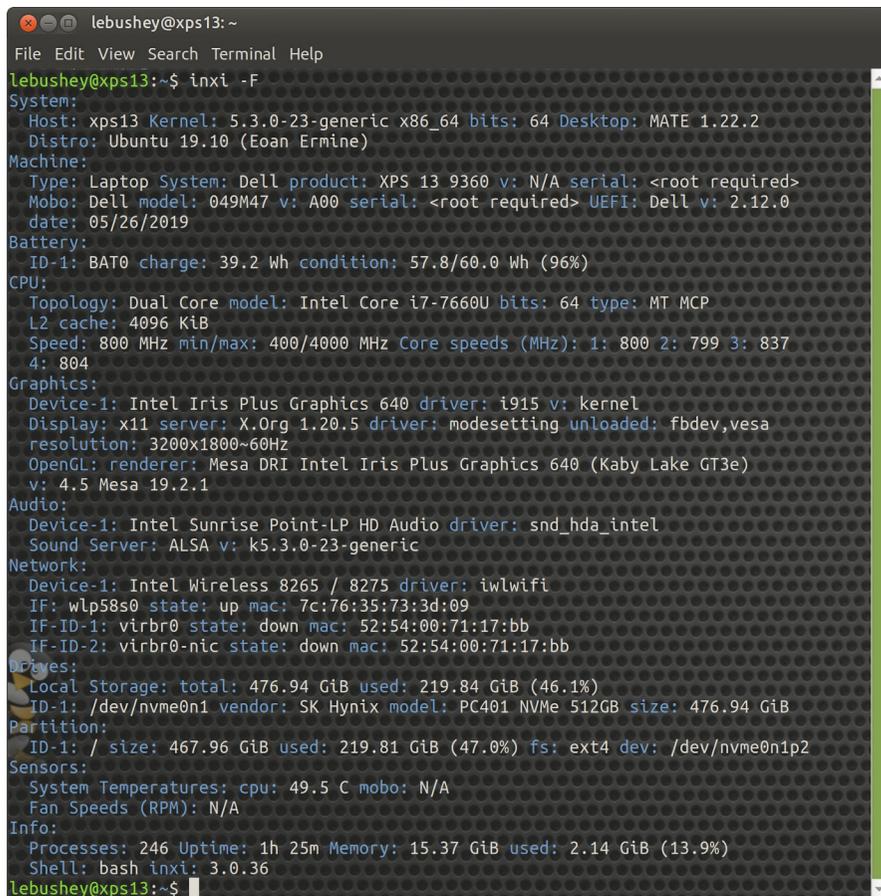
```
inxi -F
```

For a more verbose set of information, use

```
inxi -Frmxx
```

For just the very basic info, type simply

```
inxi
```

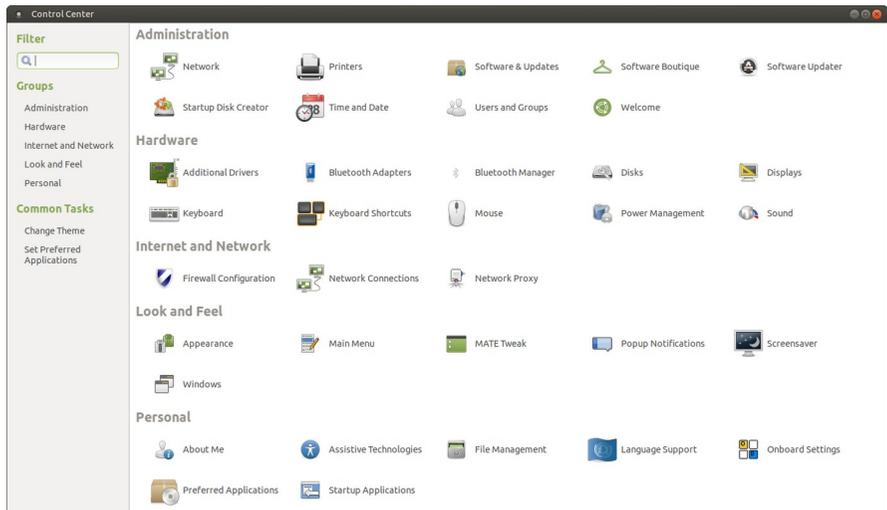


```
lebushey@xps13: ~  
File Edit View Search Terminal Help  
lebushey@xps13:~$ inxi -F  
System:  
  Host: xps13 Kernel: 5.3.0-23-generic x86_64 bits: 64 Desktop: MATE 1.22.2  
  Distro: Ubuntu 19.10 (Eoan Ermine)  
Machine:  
  Type: Laptop System: Dell product: XPS 13 9360 v: N/A serial: <root required>  
  Mobo: Dell model: 049M47 v: A00 serial: <root required> UEFI: Dell v: 2.12.0  
  date: 05/26/2019  
Battery:  
  ID-1: BAT0 charge: 39.2 Wh condition: 57.8/60.0 Wh (96%)  
CPU:  
  Topology: Dual Core model: Intel Core i7-7660U bits: 64 type: MT MCP  
  L2 cache: 4096 KiB  
  Speed: 800 MHz min/max: 400/4000 MHz Core speeds (MHz): 1: 800 2: 799 3: 837  
  4: 804  
Graphics:  
  Device-1: Intel Iris Plus Graphics 640 driver: i915 v: kernel  
  Display: x11 server: X.Org 1.20.5 driver: modesetting unloaded: fbdev,vesa  
  resolution: 3200x1800~60Hz  
  OpenGL: renderer: Mesa DRI Intel Iris Plus Graphics 640 (Kaby Lake GT3e)  
  v: 4.5 Mesa 19.2.1  
Audio:  
  Device-1: Intel Sunrise Point-LP HD Audio driver: snd_hda_intel  
  Sound Server: ALSA v: k5.3.0-23-generic  
Network:  
  Device-1: Intel Wireless 8265 / 8275 driver: iwlwifi  
  IF: wlp58s0 state: up mac: 7c:76:35:73:3d:09  
  IF-ID-1: virbr0 state: down mac: 52:54:00:71:17:bb  
  IF-ID-2: virbr0-nic state: down mac: 52:54:00:71:17:bb  
Drives:  
  Local Storage: total: 476.94 GiB used: 219.84 GiB (46.1%)  
  ID-1: /dev/nvme0n1 vendor: SK Hynix model: PC401 NVMe 512GB size: 476.94 GiB  
Partition:  
  ID-1: / size: 467.96 GiB used: 219.81 GiB (47.0%) fs: ext4 dev: /dev/nvme0n1p2  
Sensors:  
  System Temperatures: cpu: 49.5 C mobo: N/A  
  Fan Speeds (RPM): N/A  
Info:  
  Processes: 246 Uptime: 1h 25m Memory: 15.37 GiB used: 2.14 GiB (13.9%)  
  Shell: bash inxi: 3.0.36  
lebushey@xps13:~$
```

Control Center



The Control Center provides you with a single window that houses all of the major Ubuntu MATE preference tools. These tools let you tweak the way things look and behave, manage software updates, and make adjustments to the printing system, among other things.



Simply click the icon for the preference you want to adjust. Each of these preferences is also available under the *Menu > Preferences* menu. The items in the menu correspond to the items in the Control Center.

You'll also find many of the settings and selections you can make from within the Ubuntu MATE Welcome application are also available in the Control Center. The Control Center simply provides a central point from which you can adjust almost any system-level setting for your Ubuntu MATE computer.

Note: For more help on this application, see the *Configuring Your Desktop* topic in the MATE Desktop User Guide. Simply click on the desktop (the background wallpaper) then press the <F1> key on your keyboard to open the MATE Desktop User Guide.

Ubuntu MATE's Applications

These are the applications you will likely use regularly.

Head-Up Display



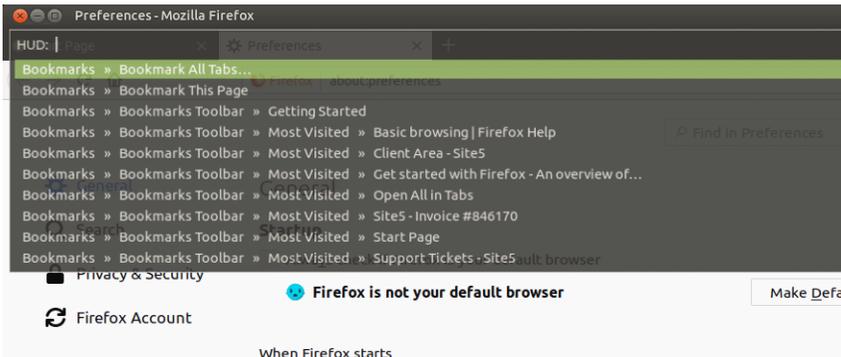
Introduced in Ubuntu MATE 16.10 the head-up display (HUD) provides a way to search for and run menu-bar commands without your fingers ever leaving the keyboard.

So if you're trying to find that single filter in the Gimp advanced image editor but can't remember which filter category it fits into, or if you can't recall whether the preferences setting sits under *File*, *Edit*, or *Tools* on your favorite browser, you can just search for it rather than scrolling through the menus.

Like Global Menu the HUD is currently only available when using the Contemporary, Cupertino, and Mutiny panel layouts.

Using the HUD

In order to use the HUD, you must be using one of three panel layouts: Contemporary, Cupertino, or Mutiny. The HUD is activated simply by pressing the <Alt> key once. The HUD overlays on top of the active application, allowing you to find the menu selection you want by simply typing. When you have found the menu item you want to use, simply press <Enter> to activate it.



Productivity Applications

Many of the applications you would expect to find installed on a modern computer are provided, pre-installed on Ubuntu MATE. If you don't find an installed application to do what you want to do, you'll likely find it in the Software Boutique or by using one of Ubuntu MATE's other software management applications, then you can install it from there. See the topic [Installing Additional Applications](#) for more information about installing software.

Unlike with Windows and macOS, Ubuntu MATE provides you with all of the pre-installed applications at no charge. And the vast majority of the software available in the software repositories is also free of charge. Here is a sampling of some of the productivity applications you'll find as soon as you start using Ubuntu MATE.

Firefox Web Browser



Pre-installed with Ubuntu MATE, Firefox is a popular application on almost any computing platform that delivers safe, easy web browsing. A familiar user interface, enhanced security features including protection from online identity theft, and integrated search let you get the most out of the web. Firefox also provides features such as changing your home page, searching the web, bookmarking a site, and using a private browsing mode. You can also synchronize your Firefox bookmarks, history, passwords and more between your devices.

Note: For additional help with Firefox, go to the Firefox help site at <https://support.mozilla.org/products/firefox>.

Evolution Mail and Calendar



Web-based email programs that come from your Internet service provider (ISP) and Internet mail systems like Yahoo Mail and Google's Gmail are convenient to use because they allow you to read and send email from any device. The only thing you need to run these is a web browser and an Internet connection. Many ISPs provide email clients that you can use to read and respond to your email off-line as well. Unfortunately, those off-line programs are usually applications for Windows. Many ISPs also give you the option of using their online email in conjunction with almost any computer-based email client that can handle POP mail or IMAP mail. Evolution allows you to access your personal information like your calendars, mail, address books and tasks in one place.

Evolution's features work with Exchange and Google servers, web calendars, RSS readers, and other services you might use.

If you use the automatic account configuration, setting up a new account with Evolution is easy. The first time you run Evolution, it opens the First-Run Assistant. It helps you set up email accounts and import data from other applications. All you need to do is provide your username and password for your email provider and your email address.

Note: To learn more about how to use each of the features of Evolution, see the Evolution Mail and Calendar Manual by pressing the <F1> key on your keyboard while Evolution is open.

LibreOffice Office Productivity Suite



LibreOffice is a full-featured office productivity suite that provides a near drop-in replacement for Microsoft's office suite and is compatible with Google's online office suite. Like many office suites, LibreOffice includes several applications, but unlike other suites, it contains applications like Base and Math, as a basic part of the suite. LibreOffice is also truly full-featured, unlike the online versions of office productivity apps that provide only the basic functions most people use. Basic capabilities are fine until you need to use one of those "advanced" features. Then you'll be looking for something with all the features.



Writer, the word processor.

Compare with Microsoft Word and Google Documents.



Calc, the spreadsheet application.

Compare with Microsoft Excel and Google Sheets.



Impress, the presentation engine.

Compare with Microsoft PowerPoint and Google Slides.



Draw, the drawing and flowcharting application.

Compare with Microsoft Visio and with inserting a drawing into a Google Doc.



Base, the database and database front end.

Compare with Microsoft Access.



Math, for editing mathematic formulas.

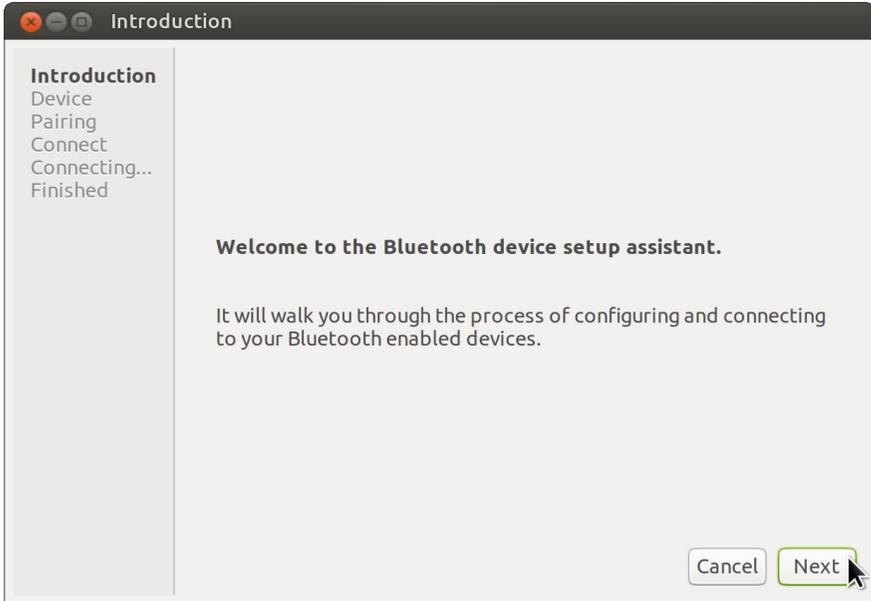
Compare with Microsoft Equation editor and the Auto-Latex Google Docs add-on.

Note: The Document Foundation (the organization behind LibreOffice) maintains an excellent set of documentation online for LibreOffice at <https://documentation.libreoffice.org>

Bluetooth Connectivity



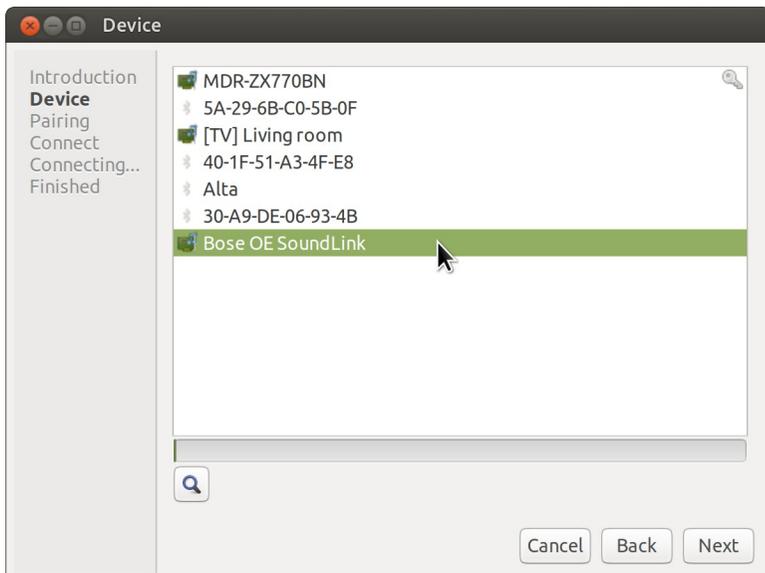
Ubuntu MATE provides the software you need to support Bluetooth connections to headphones, mice, keyboards, or other computing devices.



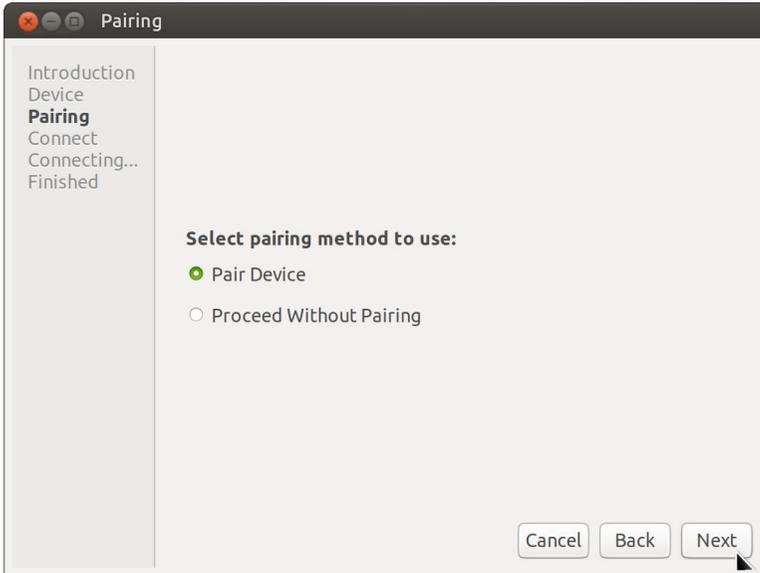
Connecting Devices (Pairing)

In order to use a Bluetooth device like a mouse or a headset, you first need to connect (pair) your computer and the device. Before you begin, make sure Bluetooth is enabled. Some computers allow you to disable Bluetooth from BIOS/UEFI. Check your BIOS settings to ensure that, if you have this setting, Bluetooth is enabled. Some laptops have a function key or other button that toggles Bluetooth and/or Wifi on and off. If your computer has this capability, make sure that Bluetooth is enabled in that way as well.

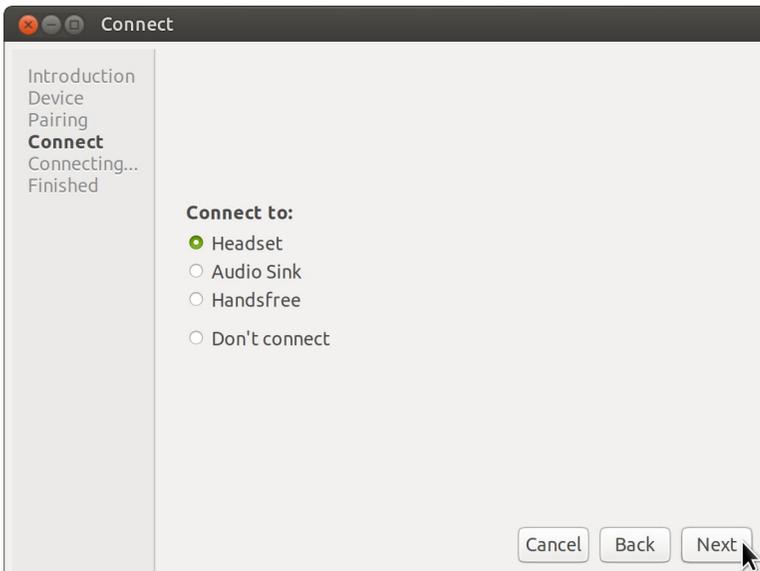
1. Click the Bluetooth icon in the upper panel and select **Set Up New Device**. The Bluetooth device setup assistant will open to help you in configuring and connecting Bluetooth enabled devices.
2. Make the other Bluetooth device discoverable or visible (or put it in pairing mode) and place it within 30 feet (about 10 meters) of your computer. Click **Next**. Your computer will begin searching for devices.
3. If the device you want to pair is not in the list, click the magnifying glass icon to begin the search again. Select the device to pair and click **Next**.



4. Choose the pairing method. If you aren't sure, choose *Pair Device* and click **Next**.



5. If you are given connection options, make the appropriate selection for your device and click **Next**.



6. If you are presented with the option, click **PIN options** to set how a PIN will be delivered to the other device.

Note: The automatic PIN setting will use a six-digit numerical code. A device with no input keys or screen, such as a mouse or headset, may require a specific PIN such as 0000, or no PIN at all. Check your device's manual for the proper setting.

7. Click **Next** to proceed. If you did not choose a preset PIN, the PIN will be displayed on the screen.
8. If required, confirm the PIN on your other device. The device should show you the PIN you see on your computer screen or may prompt you to enter the PIN. Confirm the PIN on the device, then click **Matches**.

Note: You need to finish your entry within about 20 seconds on most devices, or the connection will not be completed. If that happens, return to the device list and start again.

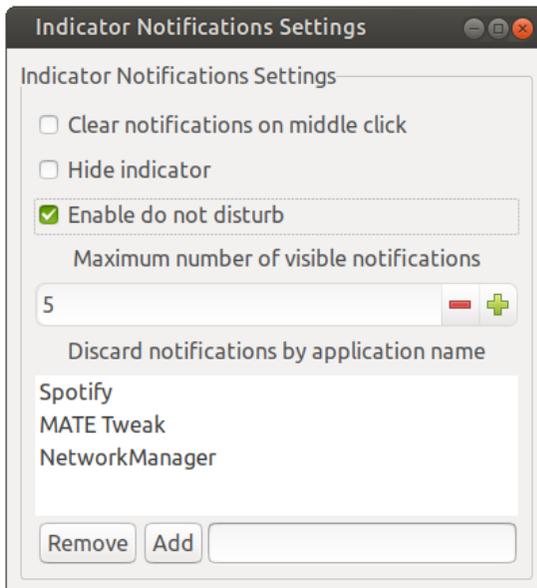
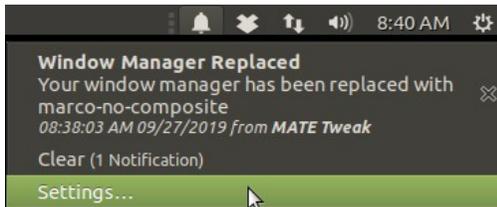
9. A notification appears when the connection successfully completes. Click **Always accept**.



Indicator Applet



The Notification Center displays text notifications, as well as notifications supplying additional media, such as sounds or icons. offers a “do not disturb” feature. When do not disturb is enabled, notifications will not be displayed but will be captured in the notification center for review. It’s also possible to blacklist some notifications, so they are never stored by the notification center.



Barrier



Barrier is a magical, cross-platform application that allows you to use the keyboard and mouse from one of your computers, to control and interact with the desktops of other computers on the same network. Barrier is one of my favorite utilities. Although it's not pre-installed with Ubuntu MATE, it is available in the software repositories.

With Barrier's graphical, drag and drop setup, you can be controlling multiple Linux, macOS, and Windows computers in minutes. You can set up and control up to 14 client computers running a mix of Windows Vista through 10, macOS 10.9.X and newer, Red Hat Linux REHL 6 and 7, Ubuntu (and derivatives) 12.04 LTS and up, and Debian.

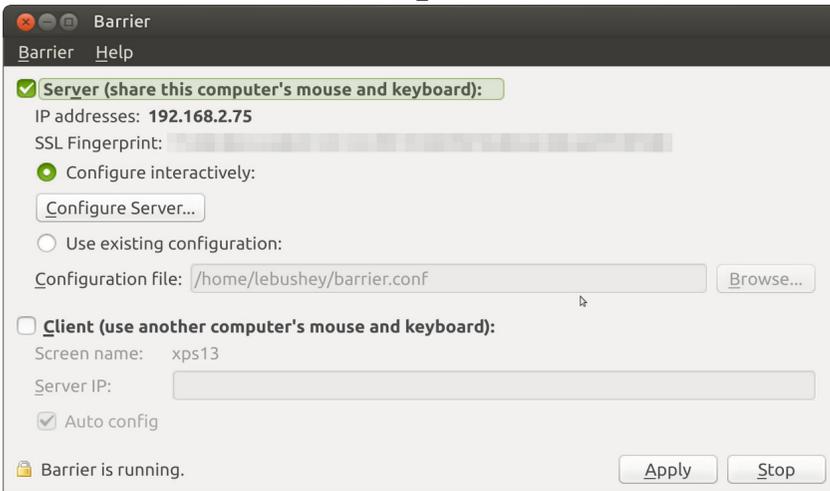
In the example below, the keyboard and mouse are connected directly to my Dell XPS 13 running Ubuntu MATE, so we will be using those devices to control both this Linux computer, and an older HP G60 computer, also running Ubuntu MATE. The controlling computer is considered by Barrier to be the "server" but we don't need to worry about that terminology, since the setup doesn't require that you know that at all. Here are the steps that I used.

Installing and Starting Barrier on Linux

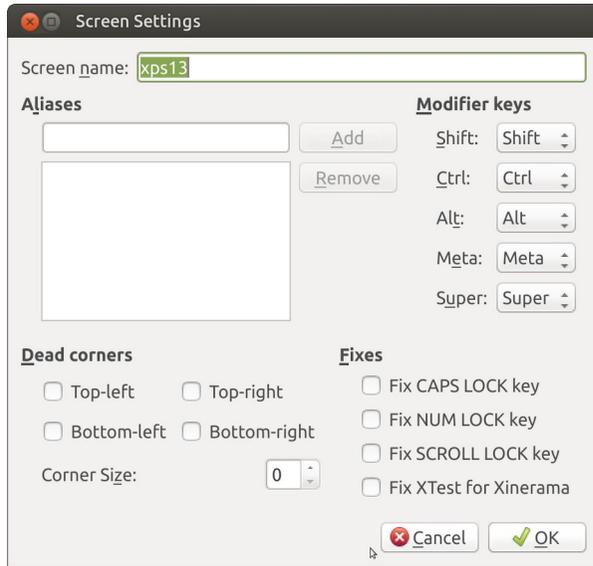
1. To install Barrier, open your favorite Linux distribution's software repositories, package manager, software center, application library, add/remove programs, or whatever it provides for getting new software. Search for "barrier." Check the version that is available. If it's earlier than 2.1.0, then you might try either the Snap package or the Flatpack package. Both are available.

2. Next, determine where your computers are (or will be) located. In my case, I have my XPS 13 laptop sitting in the center of my desk. I have my G60 computer on the right side of the desk. My keyboard and mouse are in a keyboard tray between the two, and are connected directly to the Dell XPS 13. Although I also have a Windows 10 computer to the left and a monitor for my Macbook Air on the wall above the Dell, we won't consider them for purposes of these instructions. Once you have Barrier installed on all client computers, the configuration steps are the same as for the HP G60 described here.
3. Open the Barrier application on each computer. For most Linux distributions, Barrier is located in *Applications* or *Menu > Accessories > Barrier*.

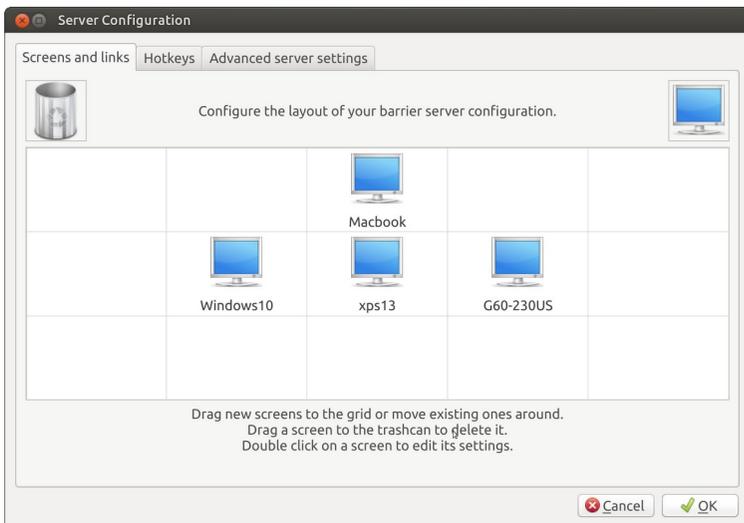
On my Dell (the controlling computer) in the Barrier dialog box after the Welcome screen, I selected the *Server* check box, and click the **Configure Server** button.



On the configuration screen, double-click the picture of the computer in the center of the window and enter your computer name as the Screen name. When I installed Ubuntu MATE on my Dell, I named the computer "xps13" so that is what I entered. Click **OK** to save the settings.

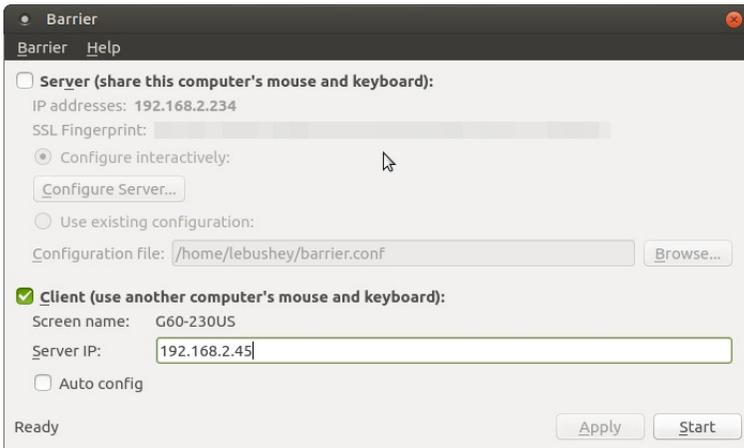


Drag the monitor icon from the upper right onto one of the 14 vacant squares. Since my HP G60 is on the right, I dropped the icon to the right of the XPS13's icon. I double-clicked on the "Unnamed" icon that was just created. When I installed Ubuntu MATE, I named the computer "G60-230US", so that's the name I used for it's Screen Name. Click **OK** to save the settings.



4. Click **OK** when you have completed the setup, then click **Start** to start Barrier on the XPS13 computer.
5. To set up the G60, we need the IP address from the XPS13 computer. To display the IP address, click the Network icon in the Ubuntu MATE notification area and select **Connection Information**. The IP address in the IPv4 section is the one you want.

Now, on the G60, in the Barrier dialog box, check the **Client** box and enter the IP address of the XPS13 as the Server IP.



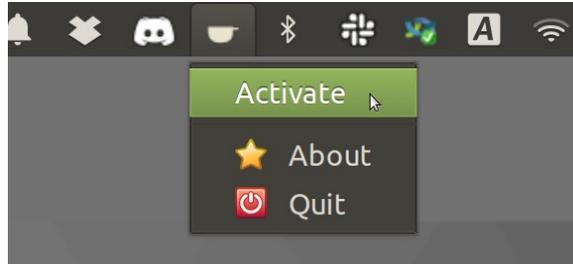
6. Click the **Start** button, wait a second or two, and the two computers are connected. To test it, move the mouse to the right edge of the XPS13 screen and beyond. It appears on the G60 screen on the right! Now when you type on the keyboard, your text will appear on the computer where the mouse is located.

Caffeine



With a coffee cup for an icon, Caffeine is a status bar application which sits in the panel near the clock and prevents the desktop from becoming idle. Simply click on the icon and choose *Activate* to temporarily prevent the activation of both the screensaver and the "sleep" power saving mode. Click the icon again and choose *Deactivate* to go back to normal.

Caffeine is not installed out-of-the-box with Ubuntu MATE, but it is available at no charge in the Software Boutique for one-click installation.



Document Management

Ubuntu MATE makes printing, scanning and saving documents almost easier than creating them. All the software you are likely to need is pre-installed for most popular printers and scanners, so setting up your hardware is easy, too.

Printing



Printing on Ubuntu MATE is simple and easy. The most popular printer drivers are already provided in Ubuntu MATE's Linux kernel. In most cases you simply connect your printer via its USB cable and Ubuntu MATE immediately configures it for use. There is nothing to do but start printing.

If you need to configure a network (or wireless) printer manually, you can follow these simple steps. Before you start, ensure that the printer is turned on and connected to the same network as your computer.

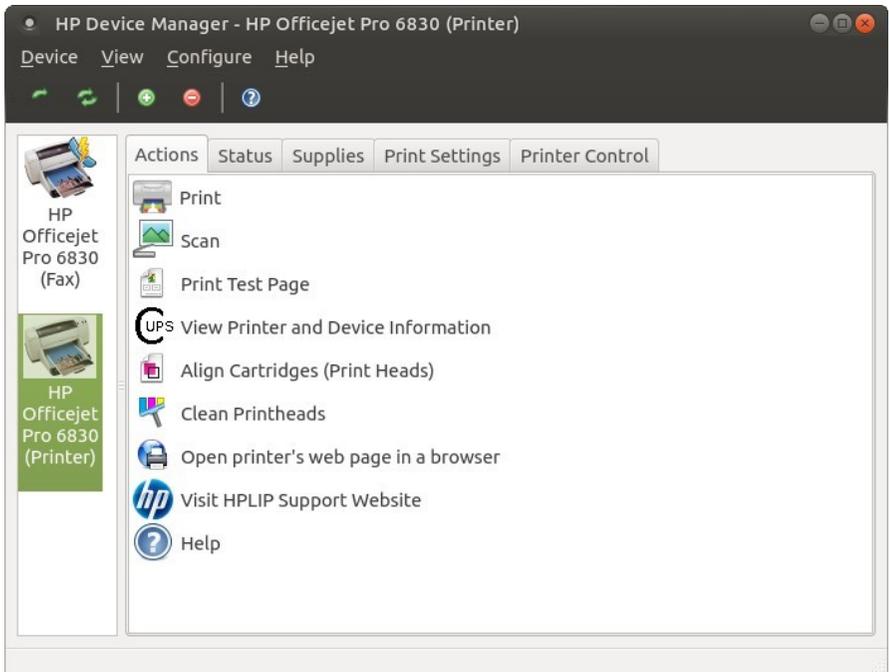
1. Open the Printers application at *Menu > Administration > Printers*.
2. Click **Add**.
3. Click on *Network Printer* to view the network printers automatically detected by Ubuntu MATE.
4. Select the printer from the list and click **Forward**. Note that a driver has been automatically selected for you. If your printer driver is not automatically selected, you can select the manufacturer and the model from the database of drivers when prompted.
5. On the next screen, you can accept the suggestions provided or you can name your printer, give it a long description and even name its location.
6. Click **Apply** to complete the configuration.
7. Print a test page to verify the setup and you are ready to begin using your network printer.

Advanced Printing Utility



For added control, you can install the HP Linux Imaging and Printing (HPLIP) utility from the Ubuntu MATE Welcome application or from the Software Boutique. It gives you access to additional drivers and provides more options for managing your printers. For inkjet printers, as long as your printer supports it, you can monitor ink levels and printer status, you can change page size and print quality, and you can even clean the print heads. For multi-function devices, you can change fax header information and other settings for the fax functionality. Scanning functions are supported by the separate Simple Scan application described in the next section.

Note: To learn more about the HPLIP toolbox, see the web page for the utility at <http://hplipopensource.com/hplip-web/about.html>.



Scanning



The Simple Scan application, found in the Ubuntu MATE menus at *Menu > Graphics > Simple Scan*, provides a simple and easy way to scan your documents. Once your scanner is connected via USB or over the network, the configuration is usually automatic.

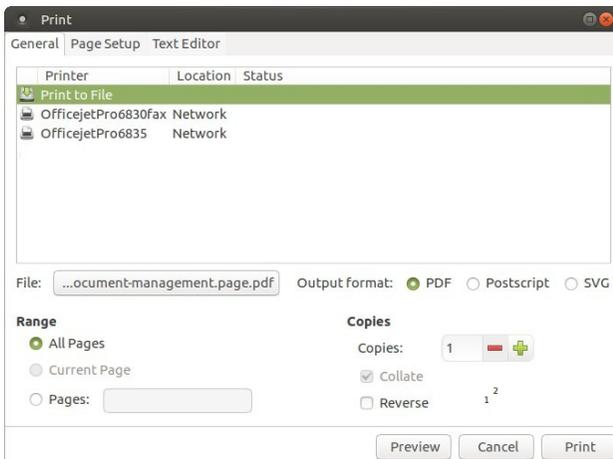
Using Simple Scan is as easy as: load your document, press Simple Scan's **Scan** button, then save the image.

Note: For more information about how to use Ubuntu MATE's more advanced scanning capabilities, view the "Simple Scan Manual" by pressing <F1> while Simple Scan is open.

PDF Creation



Whether you are scanning a page, writing a book, or saving a web page, you sometimes need to make a PDF file from a document. You don't need a special application with Ubuntu MATE. PDF creation is built-in. Most applications provide a menu selection to **Save As PDF** or **Export to PDF**. If the application you use does not offer one of those options, Ubuntu MATE provides the ability to print a document or file in PDF format. See the illustration below.



Entertainment

Ubuntu MATE comes pre-installed with three significant applications for managing your entertainment and media files and subscriptions. If you need more, the software repositories offer much, much more to choose from.

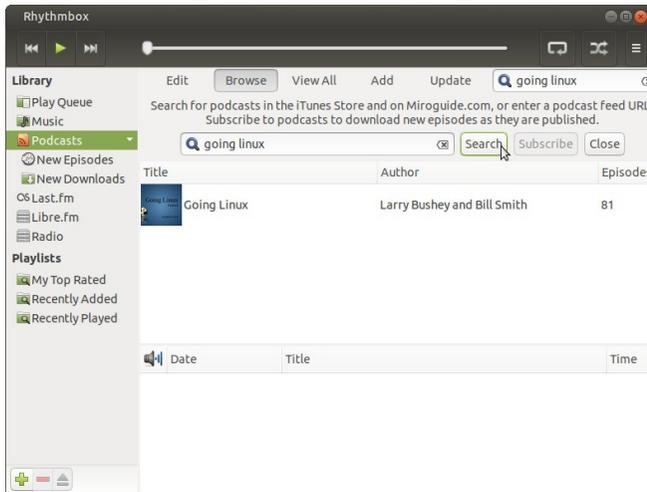
Rhythmbox Music and Podcast Manager



Rhythmbox, found in the Ubuntu MATE menus at *Menu > Sound & Video > Rhythmbox*, is a very easy to use music playing and management program which supports a wide range of audio formats (including MP3 and ogg). Originally inspired by Apple's iTunes, Rhythmbox is much easier to understand and use, and it supports Internet Radio, iPod integration and generic portable audio player support, audio CD burning, audio CD playback, music sharing, and podcasts.

Subscribe to a podcast with Rhythmbox

1. Click *Podcasts* in the Rhythmbox's left pane.
2. Click the **Add** button in the button bar. The search pane opens.
3. Type a search term or you can type or paste the link for the podcast feed into the search field.



4. Click **Search**. Podcasts matching your search appear in a list below the search.
5. Select the podcast you want from the list and click **Subscribe**. The episodes are added to the playlist and Rhythmbox immediately begins downloading the latest episode into a folder named for the podcast within your Music folder. Rhythmbox checks periodically for new episodes of each podcast and downloads them for you.
6. Click **Close** to hide the search pane.

To play an episode, select one from the list and press the **Play** button. You may wish to click on the header of the **Date** field to sort the episodes so that the latest episode is at the top of the list. As long as you have an Internet connection, you can play any of the older episodes without downloading them. Right-click any episode in the list to see an option to download that episode.

Note: For more information on how to use the playlist and other features of Rhythmbox, see the "Rhythmbox Music Player Manual" by pressing <F1> while Rhythmbox is open.

Shotwell Digital Photo Organizer



Shotwell, found in the Ubuntu MATE menus at *Menu > Graphics > Shotwell*, is a digital photo organizer. It allows you to import photos from disk or camera, organize them in various ways, view them in full-window or full-screen mode, and export them to share with others. It is able to manage photos in many different image formats, including raw CR2 files.

When you first launch Shotwell, it scans your computer for photos and imports them so that you can use Shotwell to organize them. Once you have all the photos from your computer's hard drive within Shotwell, you can import new files by choosing *File > Import From Folder* from the menus, or by dragging and dropping them onto the Shotwell window, or by connecting a camera to your computer and choosing to import the photos from there.

With Shotwell, you have several features to help you organize your photos. You can group photos that were taken at the same time into events, then rename, merge and sort events. Flag photos to mark them as special, or to work with them as a set. You can also search for, rate, tag, and title your photos.

Shotwell also provides the ability to edit the photos themselves. You can change the date and time of photos where they are incorrect, crop photos, remove red-eye, auto-enhance to improve brightness and contrast, rotate or flip a photo, and even straighten photos taken at an angle.

Of course, you can share your photos from Shotwell by exporting or printing them. You can also publish them to Facebook or other online sites, send them via email or instant messaging, or simply display them as a slideshow.

Note: To learn more about how to use each of the features of Shotwell, see the "Shotwell Photo Manager Manual" by pressing <F1> while Shotwell is open.

Celluloid Media Player



Celluloid, found in the Ubuntu MATE menus at *Menu > Sound & Video > Celluloid*, is a simple media player that aims to be easy to use while maintaining high level of configurability. Playlist entries can be added, removed, or rearranged easily with drag and drop operations.



Note: Linux Spotlight is © 2020 by Rocco (Big Daddy Linux)
<https://bigdaddylinux.com/video/episode-26-martin-wimpress/>

Security



The Linux operating system is more secure, and better supported than the operating systems pre-installed on most home computer hardware today. Linux is backed by many large corporations, as well as independent developers and users, many of whom are focused on ensuring and improving the security that is built into the operating system. The built-in updater provided with the Ubuntu MATE distribution of Linux provides security updates for both its software applications and the operating system. Vulnerabilities are patched more quickly and are delivered automatically and more frequently than the two most popular operating systems.

Unlike operating systems that update only once a month, Ubuntu MATE receives updates continuously. The updates include security patches for Ubuntu MATE and its installed applications and are all provided on the same frequent schedule. This ensures that you have the latest protection for all of your computer's software -- as soon as it's available!

Ubuntu MATE is designed to make it difficult for viruses, rootkits, and other malware to be installed and run without conscious intervention by you, the user. Ubuntu MATE users are not administrators by default. Administrators ("root" users) on any computer system have permission to do anything they want, including doing damage to the system. To be extra secure, Linux requires you to provide your administrator password to install or run programs as root. Every single time.

Basic Linux Security Guidelines

The Canonical website lists 35 Linux Trojans, viruses and worms in its latest published list while av-test.org records over 250,000 new malicious (mostly Windows) programs every day, so...

- If you dual-boot with Windows, run Windows in a VM, use WINE, or simply share files with Windows-using friends, scan the files for viruses.
- Enable the Ubuntu MATE software firewall, if it isn't already. (See below.)
- Keep your system updated. Updates are automatic on most Linux distributions. Let them run as soon as they are available.
- Use strong passwords. On everything. And use a secure password manager to store them.
- Make backups regularly.
- Install software only from trusted sources, like Ubuntu MATE's Software Boutique or software repositories.
- Use security-related plugins for your Internet browser that protect your data, credentials, and privacy.
- Use your common sense. The biggest security threat is generally found between keyboard and chair.

The Ubuntu Wiki provides additional recommendations on Basic Security at <https://wiki.ubuntu.com/BasicSecurity>. The security tools and concepts presented there include most of those listed above plus more details in these categories:

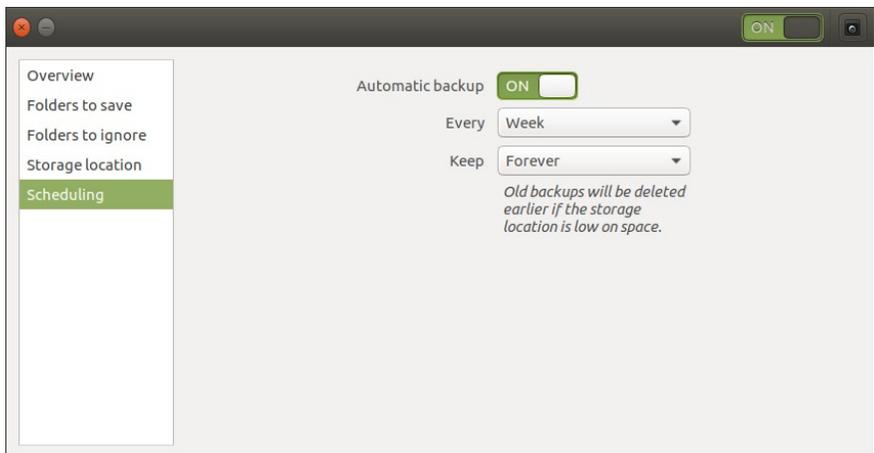
- Your Tolerance for Risk
- Linux Vulnerabilities Myths and Reality
- Backups
- It All Starts With a Good Password
- Know What Sudo is Doing
- Don't Log in as Root
- Encrypt Your Home Folder
- Least Privileges, Always
- Security Updates
- Know What You Have, Have What You Know
- Make Your Browser More Secure
- Home Network

Backups (Déjà Dup)



Ubuntu MATE comes pre-installed with a backup utility called Déjà Dup. The application is found in the Control Center at *Menu > Control Center > Backups*. Reinstalling an operating system again after something goes horribly wrong is annoying at best, but losing your photographs, emails, and personal documents can be a devastating loss of priceless, irreplaceable valuables. Backing up the information on your hard drive on a regular basis is critical for anyone who uses a computer routinely. You have spent hours on end producing the information that is on your hard drive. You should routinely back up at least your new data files on a weekly basis. "Data" files include databases, documents, spreadsheets, etc. Anything YOU created, imported, or downloaded onto your hard drive is a data file.

If you are prepared to restore from a backup, then you are far more secure. It is important to make backups right before performing certain risky operations like upgrading to a new operating system version, moving a large number of files around, deleting files and folders, etc. Déjà Dup even lets you automate your backups for added convenience and safety.



In the event that your computer has a digital disaster, or you are concerned that it has an infection, your backups will ensure that you can restore Ubuntu MATE to a known previously good state.

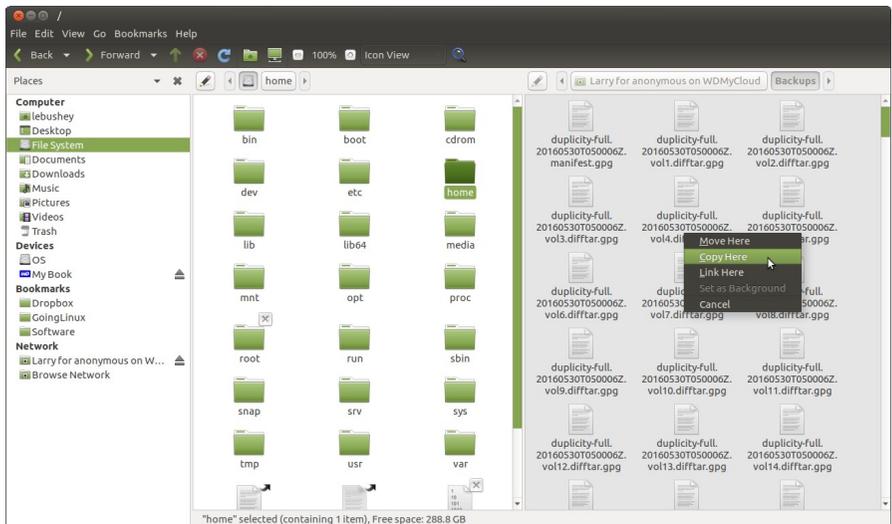
Note: For additional help on using this application, see the Déjà Dup manual by pressing F1 while Déjà Dup is open.

How Do I Know What & Where To Backup?

When I first started writing about backups years ago, the only realistic way to perform a backup on a home computer was to save the data onto CDs, DVDs, Zip Drives, Jaz Drives or (worse still) floppy disks! Today, your best option is to use online storage or an external hard drive. The focus of this topic is on making backups to hardware devices. If you don't have a network attached storage (NAS) drive on your home network, you can readily purchase an external drive with multiple terabytes (TB) of storage capacity, or even an inexpensive portable USB external drive with a couple of terabytes or more of storage -- large enough to hold the data from most computers' hard drives today.

On a typical recordable CD, you could store up to 700 megabytes (MB) of information while DVDs could store up to 8.4 gigabytes (GB). Blu-ray discs are a more recent type of optical media. They can hold up to 50GB of data. With the size of files these days, you might get one or two video files on a DVD. If you have a file that is larger than 700MB, like a moderate LibreOffice Impress presentation file, or a Writer document with graphics, an ordinary CD has no hope of holding even one whole file.

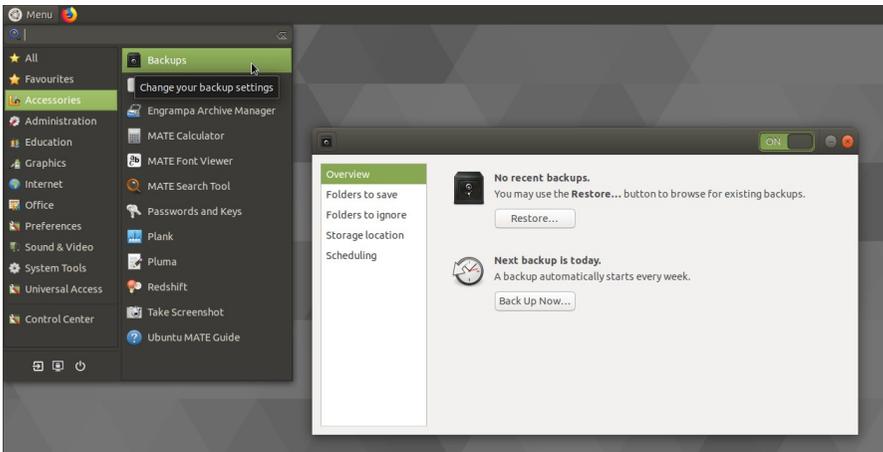
When backing-up data files, it is not always necessary to backup every file you have on your hard drive, although it's a good idea to do so monthly. On your Ubuntu MATE computer, few files, if any, outside of your "home" folder need to be backed-up at all. If a disaster were to happen, and you lost your computer or your hard drive, you could simply reinstall the Ubuntu MATE operating system and your applications in well under an hour, then restore the backed-up contents of your "home" folder. Your "home" folder contains the information that you have created yourself, including your mail file, and the settings and preferences for most of your applications.



If you have a home network you may be lucky enough to own a multi-terabyte hard drive accessible to any computer on the network. Large external hard drives have become so inexpensive that it is wise to include an external hard drive in your budget when you are buying a new computer. Ubuntu MATE's Caja file manager is shown in the illustration above, copying the "home" folder to an external 3TB NAS drive shared on a home network.

Instead of being stored on your computer's hard drive, the files you copy to an external or networked drive are stored safely off of your computer. That way, if something happens to your computer's internal hard drive, or if you have your laptop stolen, all your files are safely stored on an external device.

An equivalent to a network drive (well, sort of...) is an online (off-site) storage service like Dropbox, Box, Google Drive, or SpiderOak. The advantage to this kind of backup is that your files are stored on the Internet. Even if the worst were to happen, and you lost everything to a fire or flood, your backups would be safe. And if you copy your files to online storage, you will also likely be able to access them from another computer, a tablet or smartphone!



Backing up Your Computer Is Cheap Disaster Recovery Insurance

One way to backup inexpensively is to get a large thunderbolt, USB-C, or USB 3 external hard drive and copy everything in your "home" folder to it on a regular basis. And perhaps the easiest way to ensure that you make your backups regularly is to automate the process using the backup software that comes pre-installed with Ubuntu MATE.

At least monthly, you should make a complete backup of everything important on your hard drive either by using backup software or by simply copying to a second hard drive or a network drive. Linux applications such as the pre-installed Ubuntu MATE Backup (Déjà Dup) application can automate these backups for you. You do this so that if your computer or hard drive were to be stolen, destroyed or damaged beyond repair, you would have a "disaster recovery" copy. From a "disaster recovery" copy, you could restore your entire "home" folder to the condition it was in, at the time of your last backup. If you do such a complete backup monthly, the worst case would be that you would have to restore less than a month's worth of additional data from your incremental data backups. (Incremental backups contain only what has changed since your last full backup.)

How often should I backup?

In reality, how often you should backup depends on several factors. In general, the more you use your computer or the more critical the work you are doing, the more often you should back up.

As a general guideline, you should use the external drive and/or your online storage to make a complete backup of your entire hard drive every month. So that you don't forget, automate the process using the backup software pre-installed with Ubuntu MATE. You can even set up the Backup application so that it copies only new files, and updates new versions of files on your computer to the backup device, never deleting anything from the copy. What a lifesaver that can be!

Use an online service or external hard drive to make a monthly full backup. In addition, each week you should back up your critical data files in an incremental backup onto your external storage, or to your online storage. Incremental backups can be automated, too.

Don't wait. Setup a scheduled backup right now -- or you will wish you had!

Software Updater



The Software Updater available from the Ubuntu MATE Welcome app or from the menus at *Menu > Administration > Software Updater* is the update manager for your system. Ubuntu MATE periodically checks to see if new software and security updates are available for your computer. The updates are for Ubuntu MATE, all of its components, and all of your installed applications. This ensures that you have the latest updates and protection for all of your computer's software as soon as it's available, not just once a month like other operating systems.

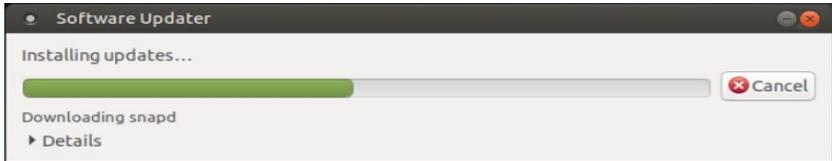
The screenshot shows the Ubuntu Software Updater window with the title "Software Updater". The main message reads: "Updated software is available for this computer. Do you want to install it now?". Below this, there is a section titled "Details of updates" which contains a table of updates. The table has two columns: "Install" and "Download". The updates listed are:

Install	Download
▶ ✓ Backups	4.9 MB
▶ ✓ Character Map	1.1 MB
✓ Disks	217 kB
✓ Firefox Web Browser	44.1 MB
✓ Simple Scan	169 kB
✓ English language pack for Firefox	703 kB
✓ Library for the Metacity window manager	67 kB
✓ Shared files for the Metacity window manager	600 kB
▶ ✓ Ubuntu base	23.8 MB

Below the table, there is a section titled "Technical description" which is currently collapsed. At the bottom left, there is a folder icon with a green arrow pointing down, followed by the text "75.7 MB will be downloaded.". At the bottom right, there are three buttons: "Settings...", "Remind Me Later", and "Install Now".

Using the Software Updater

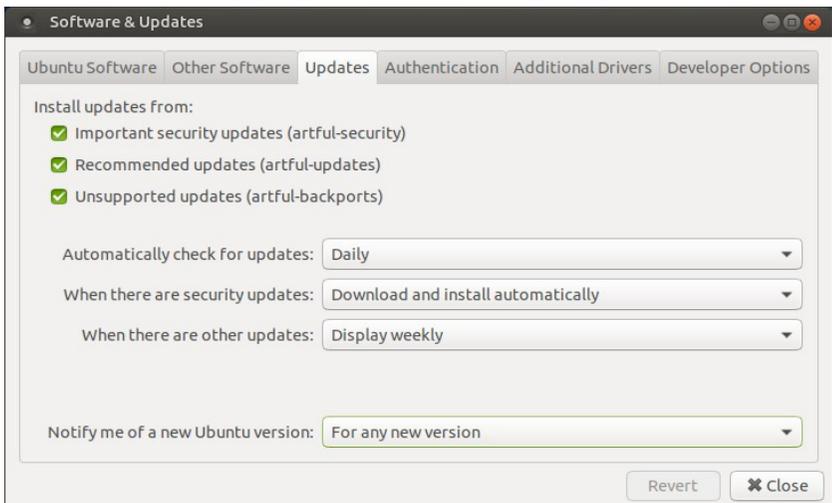
After you launch the Software Updater from the menus, if updates are available, the application lists the updates and asks if you want to install them now. Click **Install Now** to begin the download. The dialog shown below appears while the update is in progress and another appears once the update is complete.



Note: If Ubuntu MATE cannot install all of the updates and upgrades at once, you will see an option to perform a partial upgrade. You should normally choose that option, restart if required, then check for additional updates using the Software Updater.

Managing the Updates

You have control over when and how software updates occur. Use the **Settings** button on the Software Updater screen, or from the menus, choose *Menu > Administration > Software & Updates*, then select the *Updates* tab.



These are your options for controlling updates to Ubuntu MATE and its applications:

- You can choose from options to install "Important," "Recommended," "Unsupported" or any combination of these updates.
- You can have the updater automatically check for updates every day, every two days, every week, every two weeks, or turn off automatic checking altogether.
- You can have the updater automatically download and install security updates, download but not install them or simply display the updates so you can choose whether to download and install.
- For other updates (other than security updates) you can choose to display available updates as soon as they are available, weekly, or every two weeks.
- You can also choose to be notified whenever there is a new release of Ubuntu MATE, only when there is a Long-Term-Support (LTS) release, or never.

Firewall



Ubuntu MATE's Firewall Configuration utility (Gufw), found in the Control Center at *Menu > Control Center > Firewall Configuration*, provides an uncomplicated way to manage your firewall settings. The firewall is not enabled by default in Ubuntu MATE because, by default, Ubuntu MATE does not open ports to the outside world. If you do choose to enable the firewall, and if you are a normal user, you will be safe with these settings:

- Status = On
- Incoming = Deny
- Outgoing = Allow

There is no need to set the firewall to autostart. After you change the settings they will take effect immediately and remain in place until you change them again.



Appendices

Appendix A: Keyboard Shortcuts



Ubuntu MATE has many keyboard shortcuts that, by pressing a combination of keys, help you do things that normally require a mouse, trackpad, or another input device. This is a comparison of these keyboard shortcuts with those you might have used in your previous operating system.

Note: Changing your theme or window manager in the MATE Tweak tool might change some of these shortcuts. These changes in behavior are indicated in the descriptions and tables that follow.

Every major operating system makes use of a special hardware "meta key" on the keyboard. They are listed below, and for the purpose of running Ubuntu MATE on your computer hardware, the keys are equivalent with one another. In Linux documentation, the "meta key" is often referred to as the "Super key".

KEY	DESCRIPTION
	Apple OSX Command key (used on Apple keyboards)
	The Microsoft Windows logo key (used on Microsoft-branded and many generic keyboards)
	The Ubuntu logo key or Tux penguin logo key, also known as the "Super" key (used on keyboards of computers pre-installed with Linux)

Your keyboard's meta key can be used by Ubuntu MATE to activate menus and launchers as well as the many keyboard shortcuts that include the "Super" key. The MATE Dock Applet, used in the Mutiny layout, includes the ability to launch or switch to docked items based on their position in the dock using <Super> + 1, <Super> + 2, and so on.

This will be familiar to users switching to Ubuntu MATE from Ubuntu's Unity 7 Desktop. As they are for users of the MATE Desktop in other Linux distributions, both the <Super> + L and the <Ctrl> + <Alt> + L key combinations are recognized as screen lock keyboard shortcuts in Ubuntu MATE.

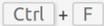
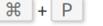
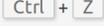
Do you need to enable the Super key?

The Super key just works after you install Ubuntu MATE on most computer hardware. However, when you order a computer pre-installed with Linux from the manufacturer Dell, you will need to follow Dell's instructions on how to enable the Super key. Details are available from Dell's support website in a knowledge base article entitled, "*How to enable the Ubuntu super key on Dell OEM Ubuntu installations.*"

Check your hardware manufacturer's documentation or website to determine if your computer's Super key requires similar setup.

Common Application Shortcuts

These shortcuts apply in most applications.

SHORTCUT	UBUNTU MATE	MACOS	WINDOWS 10
Meta Key			
Copy the selected text/object			
Cut the selected text/object			
Paste/insert the selected text/object			
Paste the selected text without formatting or with options			
Select all text			
Find and replace words			
Make the selected text bold			
Make the selected text italic			
Underline the selected text			
Open a new document or window			
Save the current document			
Open another document			
Print the current document			
Undo the last change you made			
Redo a change that you just undid			
Toggle the current application between full-screen and windowed			

Ubuntu MATE Special Shortcuts

SHORTCUT	MATE DOCK APPLLET*	UBUNTU MATE MENUS*	MATE TERMINAL
Launch the first application in the dock	 + 1		
Launch the second application in the dock	 + 2		
Launch the third application in the dock	 + 3		
Open the menu launcher			
Activate the HUD (Heads-Up-Display)	Alt	Alt	Alt

* The MATE Dock Applet is used in the Mutiny Layout.

* The Ubuntu MATE menus are MATE Menu, Brisk Menu, MATE Dock Applet.

Window Shortcuts

SHORTCUT	UBUNTU MATE	MACOS	WINDOWS 10
Switch between currently open windows	Alt + Tab	⌘ + Tab	Alt + Tab
Switch between currently open windows in all workspaces	Ctrl + Alt + Tab		Ctrl + Alt + Tab
Switch to previous workspace	Ctrl + Alt + ←	Ctrl + ←	⌘ + Ctrl + ←
Switch to next workspace	Ctrl + Alt + →	Ctrl + →	⌘ + Ctrl + →
Move the current window to the previous workspace	Ctrl + Alt + Shift + ←		
Move the current window to the next workspace	Ctrl + Alt + Shift + →		
Quit application	Alt + F4	⌘ + Q	Ctrl + F4
Close window	Ctrl + W	⌘ + W	Ctrl + F4
Return window to 'normal' or previous size	Alt + F5		
Move the current window	Alt + F7		
Minimize current window	Alt + F8		
Minimize current window	Alt + F9	⌘ + M	
Maximize current window	Alt + F10		
Toggle the pulldown terminal	Alt + F12		
Display the window menu with options such as 'Always on Top' and 'Minimize' and 'Maximize' and the above commands	Alt + Space		
Place window in top left corner of screen	Ctrl + Alt + NumPad 7		⌘ + ←, ⌘ + ↑
Place window in the top half of screen	Ctrl + Alt + NumPad 8		⌘ + ↑
Place window in top right corner of screen	Ctrl + Alt + NumPad 9		⌘ + →, ⌘ + ↑
Center/Maximize the window in the middle of the screen	Ctrl + Alt + NumPad 5		⌘ + ↓
Place window in the bottom left corner of the screen	Ctrl + Alt + NumPad 1		⌘ + ←, ⌘ + ↓
Place window in the bottom half of screen	Ctrl + Alt + NumPad 2		⌘ + ↓
Place window in the bottom right corner of the screen	Ctrl + Alt + NumPad 3		⌘ + →, ⌘ + ↓

Desktop Shortcuts

These are shortcuts you can use to operate parts of the desktop.

SHORTCUT	UBUNTU MATE	MACOS	WINDOWS 10
Open the Applications menu	Alt + F1 (Main Menu) or Alt + F2 (Brisk Menu)		Ctrl + Esc or Win + Esc
Run an application by typing its name in the box which appears	Alt + F2		Win + R
Take a screen shot of the whole screen	PrtSc	Command + Shift + 3	Win + PrtSc
Take a screen shot of the current window	Alt + PrtSc		Alt + PrtSc
Open the dialog box to shutdown, restart or suspend	Tap the Power button	Hold the Power button for 1.5 sec	
Lock your screen	Ctrl + Alt + L or Alt + L	Ctrl + Shift + Power or Ctrl + Shift + Eject	Win + L
Open a terminal	Ctrl + Alt + T		
Screen reader enable/disable	Ctrl + Alt + S	Command + F5	

Appendix B: Trying and Installing Ubuntu MATE

Creating Installation Media



The .iso file you downloaded from the Ubuntu MATE website doesn't do you much good on its own. You need to put that file in a form that will allow you to install it on your computer. This section describes how to create the installation media (CD, DVD or USB device) that will allow you to do just that. As a note, installable media is often referred to as "live" media because using this method you run Ubuntu MATE directly from the media, live. This allows you to try Ubuntu MATE on your computer without installing, and without changing *anything at all* on your computer. When you shut down and remove the "live" media, your computer is back to normal.

The quickest and easiest method of installation is using a USB drive, also referred to as a "thumb drive" "pen drive" or "USB stick." You can also use a CD or DVD to install Ubuntu MATE, but this method is recommended only for older computers or where the computer can't be configured to boot from a USB device. For information on how to make a CD or DVD for installation using Windows, macOS, and Ubuntu, see the "Burning ISO HowTo" article on Ubuntu help. (<https://help.ubuntu.com/community/BurningIsoHowto>)

Most likely, if you are considering a switch to Ubuntu MATE, you are using Windows or macOS. The official Canonical (parent company behind Ubuntu) method for Creating a bootable USB stick on Windows using a tool called Rufus and on macOS using the free and open source tool Etcher can be found by searching for "Create a USB stick" on <https://tutorials.ubuntu.com>.

Preparing For Installation

Ubuntu MATE is relatively simple to set up, whether you're looking to replace your existing operating system or install Ubuntu MATE alongside an existing one - such as Microsoft Windows or another GNU/Linux distribution.

Step one: *Backup!*

Back up any important data to another storage device before you start to install in case something goes horribly wrong! Save all of your important files and folders to an external USB drive or a 2nd hard drive. DO NOT save anything to the same drive you intend to use for Ubuntu MATE. Once you start, there is no going back! Here is an article with some considerations around backups: Backup Strategies For Your Computer (<https://goinglinux.com/articles/Backups.html>)

Step two: *Plan for recovery*

If your computer has a recovery partition and your current system allows you to create recovery disks for your computer, stop reading and go do that now. If you decide that Ubuntu MATE is not for you, this will allow you to reinstall your original operating system. Then you can use the data backup that you made in step one to restore all your data.

Step three: *Decide what to do with the recovery partition.*

If your computer has a recovery partition, if you format over the recovery partition, you will not be able to recover your previous operating system. Only format or remove the recovery partition if you are certain that you don't want it anymore.

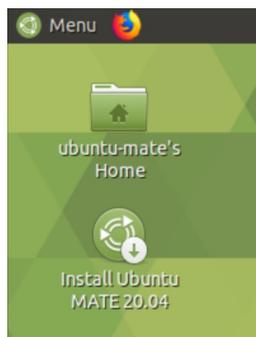
Trying and Installing Ubuntu MATE

Now that you've created the installation media, you've done your backup, and you've planned for recovery (you DID do all that right?) you are ready to install (or just try) Ubuntu MATE. For most relatively modern computers, the installation process will take well under an hour to complete. Stay connected to the Internet to install all available updates. Plug your device into a power source if it is running on battery power.

1. Completely shut down your computer.
2. Insert the USB stick.
3. Start the computer and watch the screen to determine which function key to press to change the boot device. The message flashes by quickly, right at the bottom edge of the screen, but the most frequently used keys are <F1> , <F2> , <F4> , <F12> and the key. It depends on your computer's manufacturer. If your computer boots up normally and you don't see Ubuntu MATE startup, shut down and try again.
4. When you get to the screen that lets you change the boot device, select the menu entry that represents the Ubuntu MATE live USB stick. Press the key that lets you boot using the USB stick. That's usually the <Enter> or <F10> key. If you need help, try this article from How-To Geek: "How to Boot Your Computer From a Disc or USB Drive"
5. After the disk is checked and the computer has started loading Ubuntu MATE, you will be given some options. Select the option: Try Ubuntu MATE .



6. Once Ubuntu MATE has booted successfully, you will be able to use the computer as though Ubuntu MATE were installed. It's not. It is running from the USB stick. The live session you are using provides a good opportunity to test Ubuntu MATE without modifying your computer, allowing you to test that all of your hardware and peripherals are working as intended before committing to installing it on your machine. Once you are ready, double-click the installation icon on the desktop.
7. You don't need to connect to the Internet to complete the installation of Ubuntu MATE, but if you want to use the web browser, or if you want to install additional updates during the installation, you should connect your network cable, or connect to Wi-Fi. Click the Network Manager icon in the upper right corner of the screen (near the clock) and select your SSID for your wireless network. If prompted, enter the passcode, click the **Connect** button and you will be connected.
8. To begin the installation, double-click the **Install Ubuntu MATE** icon on the desktop.



System Requirements

Ubuntu MATE is designed to run on almost any computer hardware. Of course, Ubuntu MATE runs particularly well on the newest, fastest hardware, but it also runs well on almost any vintage of machine. In fact, an older computer designed during the Windows Vista era can easily be outfitted with the new, modern and fully-supported Ubuntu MATE and it will likely run better than it did with the previously installed operating system. Of course, Ubuntu MATE will run much more efficiently if your computer meets or surpasses the recommended requirements.

For more information on the latest hardware requirements check out the Ubuntu MATE website: <https://ubuntu-mate.org/about/requirements/>

If you have a newer computer that boots with UEFI, rather than the classic BIOS, you may need to disable "Secure Boot" or enable "Legacy Boot" before Ubuntu MATE can be installed. You may also need to disable RAID if your computer came with Windows 10 pre-installed. Check your computer manufacturer's website for details on how to do those things.

9. Select your language. Press the **Continue** button.
10. If you have an Internet connection, choose the option to download updates while installing. For first-time Ubuntu MATE users, you should also choose the option to install third-party software to ensure a smooth transition to your new operating system. Press the **Continue** button.

Minimal Installation

Minimal Installation is presented as a radio button option in the installer, it will install just the MATE Desktop, its utilities, its themes and Firefox. All the other applications such as office suite, email client, video player, audio manager, etc. are not installed. This is a useful option if you have minimal disk space or you wish to select applications other than the default software provided with Ubuntu MATE.

NVIDIA Drivers

If you have an NVIDIA GPU connected to your computer and select Install third-party software for graphics and Wi-Fi hardware during installation, the NVIDIA proprietary drivers will be installed.

After completion of your installation, the proprietary NVIDIA drivers are installed and configured. Ubuntu MATE users with laptops that support hybrid graphics will see the MATE Optimus hybrid graphics applet displaying the NVIDIA logo. MATE Optimus adds support for NVIDIA On-Demand and will prompt users to log out when switching the GPU's profile.

11. If you are sure that you want to completely erase every trace of your previous operating system, choose the option: Erase disk and install Ubuntu MATE . If you are not sure, then choose the option: Install Ubuntu MATE alongside your original operating system. This will allow you to choose which operating system to use when you start your computer. If you chose to install alongside, then press the **Continue** button.
12. Press the **Install Now** button.

13. Read the message on the screen to confirm your choices, then press the **Continue** button to start the installation.
14. Select your location. Press the **Continue** button.
15. Choose your preferred keyboard layout. Press the **Continue** button.
16. Enter your full name, a name for your computer, a username, and a password. You will use the username and password when you log into your computer. Press the **Continue** button.
17. Now wait just a few minutes while the installation completes, and updates are downloaded and installed.
18. Press the **Continue Testing** button if you wish to continue to use the live environment, or press the **Restart Now** button to reboot and log into your new installation of Ubuntu MATE!
19. When prompted, remove the installation medium, then press **Enter** . Your computer will restart (if that's what you selected) and you will be prompted for your password to complete the log in process.

Appendix C: Submitting Feedback on Problems



Reporting Bugs

Ubuntu MATE provides an easy way to provide feedback to the developers when something isn't working right or things don't go as expected while using the software. If you discover non-crash hardware and desktop application bugs, reporting them to the developers is a great way to contribute to the project.

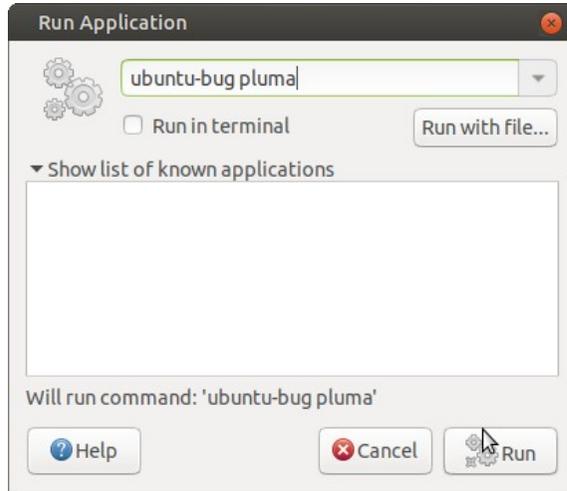
Ubuntu MATE comes with a utility that lets you report a bug in a way that provides the developers with the details they need to address the issue. The utility, Apport, is launched as the command "ubuntu-bug" and connects you directly with experts and developers via Ubuntu's Launchpad. For more information about reporting bugs with ubuntu-bug:

- <https://help.ubuntu.com/community/ReportingBugs>
- <https://www.youtube.com/watch?v=27OhY83MsU8>
- <https://www.jonobacon.com/2012/02/28/tutorial-video-reporting-a-bug-in-ubuntu/>

How To Report a Bug

When reporting a bug, you must tell Appport (the Ubuntu bug reporter) which program or package is at fault.

Press **Alt+F2** to open the "Run Command" screen, then type `ubuntu-bug <package name>` and click **Run**.



Note: If you want to file a bug about a particular software application but you don't know what that application's package name is, if it has an open window you are in luck. In a terminal execute the command:

```
ubuntu-bug -w
```

After you close the dialog the next window that you click on will have a problem report created for the package that created the window.

Follow the prompts and answer the questions to gather information about where the bug occurs. You'll get an email when the status of the bug changes or if the developers need more information.

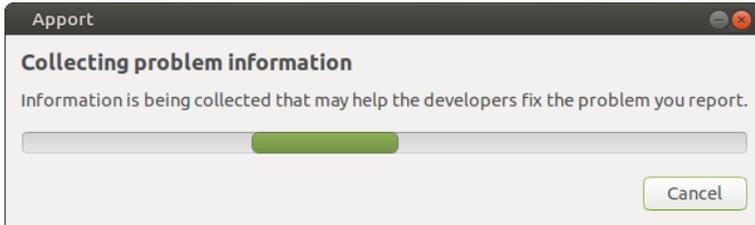
Note: If are not sure which package is affected by the bug, simply type:

```
ubuntu-bug
```

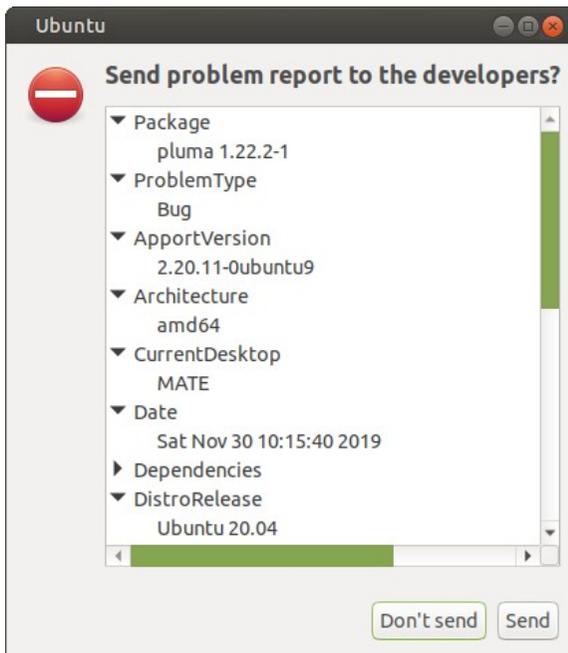
in the "Run Command" screen and press **Enter**. This will guide you through a series of questions to gather more information about the bug and help you assign it to the appropriate package.

Completing the Bug Report Filing Process

After running the above command, Apport will gather information about the bug.



A window will then pop up, asking you if you want to report the bug. Click **Send** if you wish to proceed, or click **Content of the report** if you want to review the information Apport collected.



Apport will then upload the problem information to Launchpad, and a new browser window will open to inform you that the bug report is being processed.

Report a bug

Ubuntu » "evince" package » Bugs » Report a bug about "evince" package 1...



Please wait while bug data is processed. This page will refresh every 10 seconds until processing is complete.

After the bug report data has been processed, a series of screens will open that will ask you to provide a title for the bug report that will appear in all bug listings and allow you to select from a list of bugs that have already been reported or submit a new bug.

Please describe the bug in a few words, for example, "weather applet crashes on logout":

Summary:

Do any of the following bugs describe the bug you're trying to report?

- ▶ [#243222 Evince crashes with Segfault when opening the same PDF repeatedly](#)
Invalid (1 comment) last updated 2008-06-26 [view this bug](#)
- ▶ [#556511 evince crashed after opening an encrypted pdf](#)
Fix Released (10 comments) last updated 2010-05-29 [view this bug](#)
- ▶ [#251202 OpenOffice crashes while opening large pdf file with evince](#)
Invalid (3 comments) last updated 2008-07-30 [view this bug](#)
- ▶ [#146266 evince crashed with SIGSEGV on opening PDF files not created by OpenOffice](#)
Invalid (5 comments) last updated 2007-10-19 [view this bug](#)
- ▶ [#277294 evince crashed with SIGFPE, trying to seek in KXTGA930.PDF](#)
Open (27 comments) last updated 2010-05-08 [view this bug](#)
- ▶ [#436197 evince crashed with SIGSEGV in TextWord::TextWord\(\)](#)
Open (9 comments) last updated 2010-01-31 [view this bug](#)
- ▶ [#381067 evince crashes with segfault after opening pdf file](#)
Fix Released (5 comments) last updated 2009-05-30 [view this bug](#)
- ▶ [#459735 Evince crash opening certain PDF files](#)
Fix Released (7 comments) last updated 2010-05-12 [view this bug](#)
- ▶ [#580965 opening password secured pdf causes segfault and evince crash](#)
Invalid (4 comments) last updated 2010-05-19 [view this bug](#)
- ▶ [#348565 Evince crashes when opening JSTOR PDF files](#)
Fix Released (2 comments) last updated 2009-03-25 [view this bug](#)

In providing additional information when prompted it's important that you specify three things:

- What you expected to happen
- What actually happened
- If possible, a minimal series of steps necessary to make it happen, where step 1 is "start the program"

You can also include an attachment such as a picture, video, or document that helps illustrate the problem.

When you're done, click **Submit bug report**.

Appendix D: Additional Resources

Ubuntu MATE Community



If you are looking for help and can't find the answer in this book, many more answers are available in the vast resource that is the Ubuntu MATE website.

The Ubuntu MATE website, located at <https://ubuntu-mate.org> provides a wealth of information. It provides lots of details about the operating system and even a few screenshots to give you a feel for how it looks.

Often, posing your question to the friendly and helpful Ubuntu MATE Community is the fastest and easiest way to get answers about how to use Ubuntu MATE. Join the conversation and get involved. Stop by to share your experiences, ask questions and discuss topics with other users and developers in the Ubuntu MATE community. You'll find it located at <https://ubuntu-mate.org/community/>.

Going Linux



If you need a little advice on how to get started with Linux, or how to get better with it, the Going Linux website and podcast are designed to help you discover what you need to know to do just that. Whether you enjoy reading about tips and tricks or listening to a couple of Linux users like yourself, you'll find these resources a refreshing alternative to similar commercial offerings that are more formal and less friendly. As a new Linux user, you'll have a friendly way to learn what you need to improve your competence with the software. As a more experienced user, you'll improve your confidence with Linux and its applications. As an old hand at Linux, you'll discover new ideas, solve problems and have a reference for helping yourself and others with the day-to-day use of the operating system.

If you learn best by reading, or you are simply interested in using our services, visit our website at <https://goinglinux.com>, read our articles and/or download any of our books and guides written specifically for Ubuntu MATE.

If you learn best by hearing others discuss interesting topics in an everyday conversational way, subscribe to the Going Linux Podcast using Apple Podcasts, Stitcher, Rhythmbox, or other application that lets you receive podcasts.
<https://subscribe.goinglinux.com>.

If you learn best by seeing videos on how to do something, then check out our screencasts at <https://screencasts.goinglinux.com>.

If you are looking for an introduction to switching from other operating systems to Ubuntu MATE, you can order a paperback copy or download an e-book version of the second edition of *Ubuntu MATE: Upgrading from Windows or macOS*, a paperback written with examples from Ubuntu MATE 20.04.

Appendix E: About the Author

Larry Bushey's goal is to help you build your confidence and competence using cloud, open source, and commercial software. His broad background in business consulting, technology management, project management, education, public speaking, leadership, and sales gives him a unique perspective on using today's technology to get things done.

In his professional role, consulting for a cloud computing company, he draws on 20+ years of experience designing, deploying, and educating on large-scale technology.

As creator, producer, and host of top-rated technology podcasts since 2005, he helps computer users with practical advice on how to get the most from their corporate and personal technologies and software applications.

As a technology advocate, he contributes to the Linux and open source communities by authoring documentation and writing manuals, guides, and books -- like this one!

Publications By This Author



*Using Ubuntu MATE and Its Applications:
Ubuntu MATE 20.04 LTS Edition* - Released April 2020
<https://www.amazon.com/dp/ASIN/B084DFZMFC>



Ubuntu MATE: Upgrading from Windows or macOS
- Released January 2020 (Ubuntu MATE 20.04 Edition)
<https://www.amazon.com/dp/ASIN/1658872681>

Ubuntu MATE User Guide - Released November 2016
(Ubuntu MATE 16.10 Edition)
[https://goinglinux.com/resources/Ubuntu MATE User Guide.pdf](https://goinglinux.com/resources/Ubuntu%20MATE%20User%20Guide.pdf)

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