

# Building KDE themes for Linux

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## Section 1. Tutorial tips

### Should I take this tutorial?

This tutorial is designed to teach you about K Desktop Environment (KDE) themes: how to create, save, load, and share the fundamental look and feel of the KDE environment. After completing this tutorial, you will be confident in your ability to customize KDE to fit your personal working style.

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### About the author

Brian Bilbrey is a system administrator, webmaster, author, and Linux advocate. He uses Linux in his daily work, and changes his desktop design the way some people change clothing. He welcomes your feedback on this tutorial or other related Linux topics at [bilbrey@orbdesigns.com](mailto:bilbrey@orbdesigns.com). His daily blog on life with Linux and other adventures can be found at [OrbDesigns.com](http://OrbDesigns.com).

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### Getting help

For technical questions about the content of this tutorial, contact the author, Brian Bilbrey, at [bilbrey@orbdesigns.com](mailto:bilbrey@orbdesigns.com).

## Section 2. Getting started

### Understanding KDE themes

A theme is the collected customizable attributes that combine to create the look and feel of your Linux desktop under KDE. The look includes common features such as desktop wallpaper, fonts, and background colors. Additionally, window, mouse, and panel behavior is user-definable in KDE.

Extreme configurability has always been a feature of window managers under Linux. What KDE brings to the table with theme management is ease of use. All of the various features and settings can be collected in a single file and saved, shared, uploaded, and downloaded. The largest part of most themes is simply a matter of making the right option selections and clicking the Save button.

However, a coherent and elegant theme combines the functionality of fundamental KDE window and desktop interactions with customized, complementary artwork for background, window decorations, buttons, font selections, and more. This tutorial gives you the brush, KDE the canvas. The actual art is up to you!

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### Tools and files you will need

The primary tool for working with themes in KDE is the *Themes Manager*. It is available in the *KDE Control Center* application, which can be found at the top level of the KDE main menu (also known as the "K" menu, for its location and icon).

The second primary resource for working with themes is a template, or example file. This is generally called `Template.themerc`, and can be found on your Linux system by typing `locate .themerc` from the command line, and selecting the correct file from among just a few results.

## Section 3. KDE theme basics

### What's in a theme?

Under KDE1, a theme is a collection of definitions, attributes, image, and sound files that, when applied, provide a unified visual style for the desktop. These features include wallpaper (the desktop background images), icon styles and bitmaps, window color schemes, window borders, titlebars and buttons, sounds, and specific configuration data for the KDE File Manager (KFM). Oddly, themes under KDE1 do not include font information. KDE1 manages themes from the *Desktop - > Theme Manager* selection in the *KDE Control Center*.

Themes in KDE2 have been a bit more problematic. When KDE 2.0 was released in October of 2000, there was no theme manager. A new feature under the *Look-N-Feel* portion of the KDE Control Center is called *Style*. Styles are similar to themes, but are related only to the aesthetics of user interface widgets (check boxes, radio buttons, selection boxes, and more). Section 5 of this tutorial addresses themes in KDE2.

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### How to get more themes

There are two fundamental ways to get a new theme. Either download one made by someone else, or create your own from scratch. There are advantages to both approaches, depending on your goals and usage, and just how much free time you have on your hands. Generally, it's reasonably time efficient to head over to <http://kde.themes.org/> and pick up one or more themes that meet some of your criteria, and then you can personalize these as necessary.

Apart from the canonical Themes.Org, many individuals who submit one or more themes to the wider community also have additional resources on their personal sites. A little Web digging can unearth some real gems.

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## Global vs. local themes

Global themes are those that are included by the publisher of your distribution. Additionally, the administrator of a system can add more themes to the Global list (available to all users) by putting theme definition files in `$KDEDIR/share/apps/kthememgr/Themes/`; this system directory can be found in different places depending on distribution (for example, the **\$KDEDIR** is `/opt/kde/` in OpenLinux, and `/usr` in Mandrake Linux). New global themes are available to you after you've logged out and back in to KDE.

Local themes are downloaded and stored by the normal (non-root) user. In this scenario, a theme from Themes.Org is installed within the KDE configuration directory in your home directory. Thus a newly installed local theme can be found in `~/.kde/share/apps/kthememgr/Themes`.

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## Installing a new theme

Once a theme is downloaded into your home directory, open the KDE Control Center, *Desktop* -- > *Theme Manager* module. Select the *Install* tab, and choose *Add*. Select a downloaded theme file, which is always in a gzipped tarfile (.tgz or .tar.gz) format.

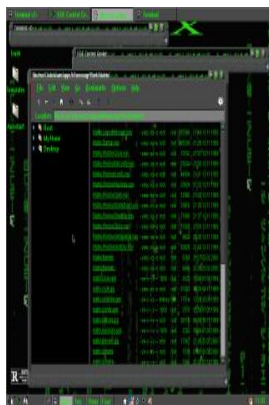
After adding a theme, it appears in the listing at the left of the *Installer* tab dialog. Choose the new theme from the listing (click to highlight), then select **Apply** from the buttons at the bottom of the window. Sit back and watch as your new theme is applied to the current desktop.

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## Selective theme application

Themes are defined in sections. If present in the file, that portion of the theme can be selectively applied. Each section, from *Colors* at the top of the list to *Konsole* at the bottom, is either available or empty. If available, checking the box permits application of that portion of the theme. Conversely, to disable *Sounds* for example, uncheck that box prior to choosing the **Apply** button.

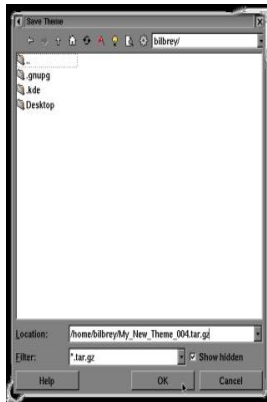


## Editing an installed theme

The single most popular download from [kde.themes.org](http://kde.themes.org) is based on the movie The Matrix. But if something isn't quite right, if you want to change a feature of the Matrix theme to match your needs or fit your artistic judgment, that's easy too!

Once a theme is installed, the compressed file is expanded into your home directory, at `~/.kde/share/apps/kthememgr/Work/Theme-Name` (where *Theme-Name* is variable). Adding and deleting files along with corresponding changes in the *Theme-Name.themerc* file permit you to fine-tune the look of your new KDE desktop.

Also, several of the downloadable files found on Themes.Org are self-admittedly incomplete, inviting the adventuresome user to take just a few steps into the theme-creation pond, not necessarily at the deep end.



## Saving a modified theme

When you've made all your adjustments, you can save the modified theme quite easily, preferably with a different name. Open the KDE Control Center, choose *Desktop -- > Theme Manager*, and select the **Save as...** button at the right of the Installer tab screen. Enter a file name in the *Save Theme* dialog box.

Alternatively, selecting **Save** writes a file with the same name as the current theme. If you don't care about keeping a version history or you can get the theme again online, then *Save* may be for you.

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## The Default theme

The *Default* theme is globally defined, and is the initial configuration for KDE when no themes are installed. Prior to experimenting with themes, **Apply** the Default theme, then reapply your color scheme. Open the Theme Manager module, and select *Save* to create a local copy of the Default theme. This overrides the global version. This handy tip allows you to back up to your starting point in the 1.x version of KDE shipped with many Linux distributions.

Alternatively, before getting started with themes, make a backup copy of your entire `~/ .kde` tree. In a terminal window type `cd ~ ; tar zcf kde_backup.001.tgz .kde`, which creates a backup file. At intervals, you might want to repeat this process, incrementing the version number, to provide incremental restoration capabilities. This works independent of the version of KDE. If a problem arises, then a backup version can be unpacked in a separate sub-directory, and selected files restored to the `~/ .kde/ . . .` tree.

## Section 4. Advanced KDE themes

### Creating KDE themes from scratch

Making your very own KDE themes is really quite simple, though it requires a good eye, a steady hand with a graphics design program, and possibly an audio tool. It's as much or more art than design. There are a few rudimentary guidelines that you should follow:

- \* Image files should be flattened, indexed, and saved in the bitmapped .xpm format. The Gimp, an excellent image manipulation program packaged with almost every Linux distribution, is a capable tool for such purposes. Point your browser at <http://www.gimp.org/> for more details.
  - \* Not every component of a theme need be installed. You could create a theme as simple as a set of sounds, a window border design, or button layout. Start simple and make step-wise improvements in your theme.
  - \* Be cautious of using copywritten materials such as image files that can be found online. Many such resources are fairly relaxed about personal use, but can get rather incensed about public use or distribution. This doesn't seem to faze many of the posters at the Themes.Org site.
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### Panel background and wallpaper

The panel background is one of the easiest of theme sections. It is defined as a single image file that can be either a pattern or a standard color. The image should be 45 pixels high, and can be any width since it is tiled to match the horizontal width of screen.

Some themes, like the aforementioned Matrix, have full-size JPG images for desktop wallpaper. On modern fast systems, this doesn't much affect the system's operation. For PC's with a small memory footprint (24M, for instance) or slower, older processors (say 486 through P-1), it is recommended that desktop wallpaper, if used, be small tileable images. Examples of many such can be found at Themes.Org; and The Gimp, with it's tileable image feature, is a great tool for creating these files.

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## Root Window Icons

The Root Window Icons are those that appear on the desktop, as opposed to menus or panels. There are three configurable features for these Icons. These options are written into the `.themerc` file (which is discussed at the end of this section in more detail).

- \* `RootIconTextStyle=1` (for transparent, or 0 for solid background)
- \* `RootIconTextForeground=rr,gg,bb` (for example: 255,0,0 for an all-red foreground)
- \* `RootIconTextBackground=rr,gg,bb` (similar Red,Green,Blue specification; this doesn't apply if the Style is transparent)



## Desktop Colors

The Desktop Colors are defined in the files at `~/ .kde/share/apps/kdisplay/color-schemes/`. Use the KDE Control Center, *Desktop -- > Colors* to set up your colors, then Add it to the list of Color Schemes. Look in the directory referenced above, and using an editor, copy the contents of your saved color scheme into the evolving `.themerc` file.



## Window Borders

Window Borders allow for a great deal of creativity and freedom of expression. The borders are defined by eight image files, one for each side, and one for each corner. For example, the image on this page is a Gimp edit window showing the `wm_topright.xpm` file from the MGBreizh theme, which is packaged with several Linux distributions.

The major design consideration is that the windows must be able to tile properly. To do that, the images you design must assemble into a perfect rectangle. It's generally easiest to draw an entire window border design, then using the guides feature of the Gimp, chop the image up into the requisite eight pieces.

## Window Titlebar features



*KWM* (the KDE Window Manager) allows solid color or gradients for the titlebar, in addition to image files. The former can be configured from the *Desktop -- > Colors*. Using an image in the titlebar is set using themes. Design your image to be 18 pixels tall, though the length can vary, since the image is horizontally tiled. If you've selected to hide the image behind the window title, then consider the possibly jarring effect of the inactive window color showing up.

Also configured in the *Window Titlebar* section of a theme are the titlebar buttons. There are five buttons: Menu, Sticky, Iconify, Maximize, and Close. Additionally, there are two states for the Sticky and Maximize buttons, making for seven image files required. A button image can be up to 20 x 20 pixels in size for some interesting visual effects, although they are commonly restricted to 16 x 16 in most configurations. Experimentation is recommended here.

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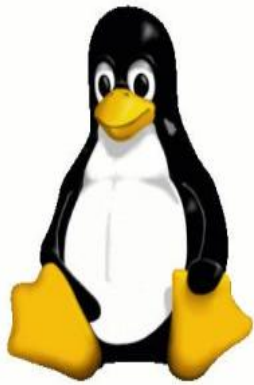
```
[Window Button Layout]
ButtonA=Menu
ButtonB=Off
ButtonC=Sticky
ButtonD=Iconify
ButtonE=Maximize
ButtonF=Close
```

## Window Button layout

Along with the button design mentioned in the previous panel, there are 6 possible locations for buttons in the title bar, referred to as ButtonA through ButtonF. A, B, and C are on the left side of the title bar; D, E, and F are on the right side. Valid values for each location are Menu, Sticky, Iconify, Maximize, Close, and Off.

Keep ease of use in mind when designing buttons and layout. A confused user will unload your theme and never use it again. On the other hand, you can view "user unfriendliness" as a *feature* to keep friends and family from playing with your machine! The choice is yours.

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## Window Gimmick

The Window Gimmick is an image file that is visible on the desktop or layered over the window in a position relative to the upper left corner of the active window. It can be used as an additional visual cue to easily locate the current window. The gimmick is rarely used, and thus, under-documented. Often the only reference you'll find is in the `.themerc` template files that accompany KDE.

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## Sounds

From the KDE Control Center, select *Sound* -- > *System Sounds* to see the list of events that can have sounds associated with them. For one-time configuration, the System Sounds module does a fine job. Look to the `Template.themerc` for guidance on how to list the sounds in a theme.

Sounds can be found in many places online, as well as created with various audio editing tools that are available for most operating systems, including Linux. Your imagination provides the only limits. As with images, be cautious of using copywritten materials when creating themes for distribution.

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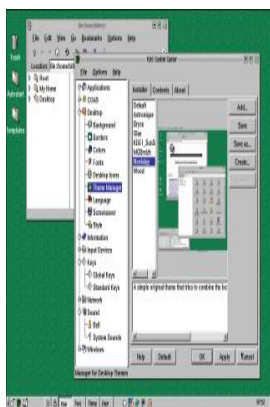
```
[Icons]
# The following icons have special keys:
#
Trash=EmptyTrash.xpm
TrashFull=FullTrash.xpm
PanelGo=SuperGo.xpm
PanelWindowList=Lister.xpm
PanelExit=Logout.xpm
PanelKey=
#
```

## Icons and extra icons

As with many other elements in KDE, you are welcome to create your own icons, both for stock uses like the trashcan and K-Button, as well as custom icons for virtually any purpose. Icons come in two sizes: 32 x 32 and 16 x 16 pixels. You should make a point of creating both sizes.

Also, bear in mind that some icons are multi-state. That is, they have different images depending on the state of the object the icon represents. For example, the trashcan can be empty or full.

Additional icons (other than those listed in the example) can be created and used by associating them with a mime-type in the `.themerc` file. For example, to use your icons for Midi files, the line in the `[Icons]` section might read  
`audio/x-midi=midisound.xpm:mini-midisound.xpm.`



## The preview image

Themes are required by tradition to have a preview image. Some themes that ship with distributions do not, but these are the exception rather than the rule. Creating a preview image is easy. Apply all of your changes, arrange the desktop to make it attractive, preferably with a browser or KFM window open, and get a screenshot using *The Gimp*, *KSnapshot*, or from the command line, the `import` command.

Save the image, and scale it down to no more than 320x240, so that it fits inside the available space in the Theme Manager module screen. Put the image in your directory with the rest of your artwork.

```
[File Manager]
backgroundImage=myBack.jpg
htmlBackground=0,0,0
htmlForeground=0,255,0
htmlLinks=0,255,0
htmlFollowedLinks=24,178,24
#-----
[Konsole]
schema=myKonsole.schema
background=myBack.jpg
#-----
```

## Other configuration data: KFM and Konsole

After setting up the KDE File Manager (KFM) and the Konsole virtual terminal application to match your theme, then you can get excerpts from their configuration files and insert these into your `.themerc` file. All of the KDE program configuration files for each user are found in `~/.kde/share/config`. The applicable files are `kfmrc` and `konsole.rc`, respectively. Extract the lines shown in the example on this panel, and place them in your `.themerc` file.



## Putting it all together: the .themerc file

In the finest of \*NIX and Linux tradition, it all comes down to an ASCII configuration file. There's a specific format for the `.themerc` file -- there are fragments of it scattered throughout this tutorial. The best place to start looking is

`$KDEDIR/share/apps/kthememgr/Themes/Template.themerc`. This file is useful for doing most fill-in-the-blank theme creation, and can be copied into your theme directory, renamed appropriately, and modified with the GUI or CLI text editor of your choice.

Additionally, download and look at the configuration and design of a few recent, extensive themes from the Internet. Observe what's been configured and how. Even the system templates don't show everything (like the Konsole and KFM bits, which were culled from online themes).

## Packaging your theme

When all is said and done, you have your configuration file, `MyTheme.themerc` for example, plus all of the assorted image files you've created or modified to match the theme. Let's presume that all of this and nothing else is found in a directory called `MyTheme`, which you have conveniently created in your home directory.

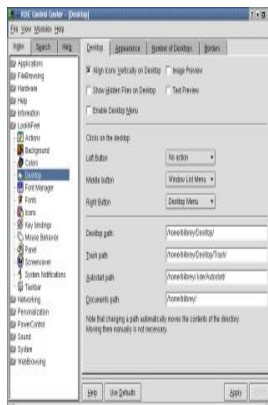
From your home directory, type `tar -czvf MyTheme.tar.gz ~/MyTheme` . That's it, you're done. You can import that file into your Theme Manager, and put it in the global KDE themes directory, so that everyone in your company or household can use the same desktop. Finally, you can share it with friends and virtual neighbors by submitting it to Themes.Org.

## Section 5. KDE2 -- themes and beyond

### Disappearing themes

With the introduction of the long awaited KDE 2.0, themes somehow ... disappeared. All of the features that were configured by installing a theme are still present. And there are additional configuration possibilities, in droves. So what happened? No explanation can be easily found online. But stay tuned, there's lots of advantages to KDE2, and a happy ending to our story.

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### What can you do in KDE2?

In the *KDE 2.0 Control Center*, the new destination for modifying the design of your desktop is found in the *Look-N-Feel* section. Within that area are the following modules: Actions, Background, Colors, Desktop, Font Manager, Fonts, Icons, Key Bindings, Mouse Behavior, Panel, Screensaver, System Notifications, and Taskbar.

Overall, there's much more functionality in the new Control Center, and some extensive improvements in fine-grained control of the user interface. As the KDE2 beta cycles continued in the late Summer and early Fall of 2000, e-mails and bug requests for a Theme Manager flew fast and furious.

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## The return of themes

Finally, with the appearance of the second beta of KDE 2.1 in late January of 2001, the Theme Manager module returned, triumphant!

There are some of new features in this latest incarnation of the Theme Manager. First and foremost, there is an uninstall option. This is long overdue, and well appreciated. Additionally, the selections have been reduced: 2.0 themes apparently no longer incorporated configuration data for other applications, just for the window environment. Version 2.0 KDE themes are starting to make an appearance on Themes.Org.

Sadly, fonts are *still* not included in the themed configuration. Also, there is (as of mid-February, 2001) no documentation on the Theme Manager and it's revised format. Look for this to be rectified in the coming months.



## Section 6. Resources and feedback

### Resources

We've mentioned all of these resources in the course of the tutorial and collected them here for your convenience:

- \* The canonical site for KDE themes is <http://kde.themes.org/>.
- \* The main KDE site for more information about this versatile desktop environment is <http://www.kde.org/>.
- \* For details on Gimp, an excellent image manipulation program packaged with almost every Linux distribution, visit <http://www.gimp.org/>.
- \* On your Linux system, running KDE, select **K -- > KDE Help** (or just Help in KDE2), then read the KDE Control Center documentation for much more information about the interconnectedness and configurability of KDE.
- \* There are at least a dozen books in print on the topic of KDE, from beginning use to advanced programming. When you've settled on a version of KDE, then head down to your friendly neighborhood (on or offline) bookstore, and get the book that's right for you.

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### Your feedback

We look forward to getting your feedback on this tutorial and on future directions in providing up-to-the-minute information about the fast-moving Linux desktop arena. Additionally, you are welcome to contact the author directly at [bilbrey@orbdesigns.com](mailto:bilbrey@orbdesigns.com).

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### Colophon

This tutorial was written entirely in XML, using the developerWorks Toot-O-Matic tutorial generator. The Toot-O-Matic tool is a short Java program that uses XSLT stylesheets to convert the XML source into a number of HTML pages, a zip file, JPEG heading graphics, and two PDF files. Our ability to generate multiple text and binary formats from a single source file illustrates the power and flexibility of XML.