Linux Desktops Overview

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Who am I?

- Professional technologist
- Contributor and package maintainer in the Fedora Project
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Linux and the desktop

From the very beginning, Linux has always been intended to be an operating system for personal computers, used on desktops and laptops. Linus Torvalds wrote Linux in order to have a proper Unix-like system on his IBM PC.

Of course, the great irony of today is that conventional GNU+Linux systems are not at all common, hovering at around 2% of global market share by most estimates.

That being said, it is certainly not for a lack of trying! Red Hat, SUSE, Mandriva, Canonical, and many others have or are trying to make it happen.

What is a Linux desktop?

A Linux desktop is a system running a Linux kernel with a full GNU userland and the main software application stack for the desktop environment.

Note the "for the desktop environment." There are *many* desktop environments (like, **dozens**!) out there for Linux systems, all with their own take on how a Linux desktop should be.

However, there are a few popular ones that are worth looking at…

KDE Plasma Desktop Environment

The biggest desktop environment is by far the KDE Plasma Desktop. It's also one of the first desktop projects, started in 1996. It is now on its fifth iteration.

It isn't big in the sense of "hogs resources" (though it is definitely no lightweight!), but it's big in that there's quite a lot of applications, services, and libraries that make up the full environment. The organization that backs the development of the Plasma Desktop is KDE, e.V. (a German non-profit organization). The primary corporate sponsor is Blue Systems, who dedicates infrastructure and development resources to KDE focused projects, like KDE neon, Netrunner, as well as employing many developers to work on KDE applications and libraries.

It is notably the default desktop environment in Mageia and openSUSE, and is the desktop provided in Kubuntu. Many other distributions offer it as the default or as an option (such as Fedora, Red Hat Enterprise Linux/CentOS, Debian, etc.).
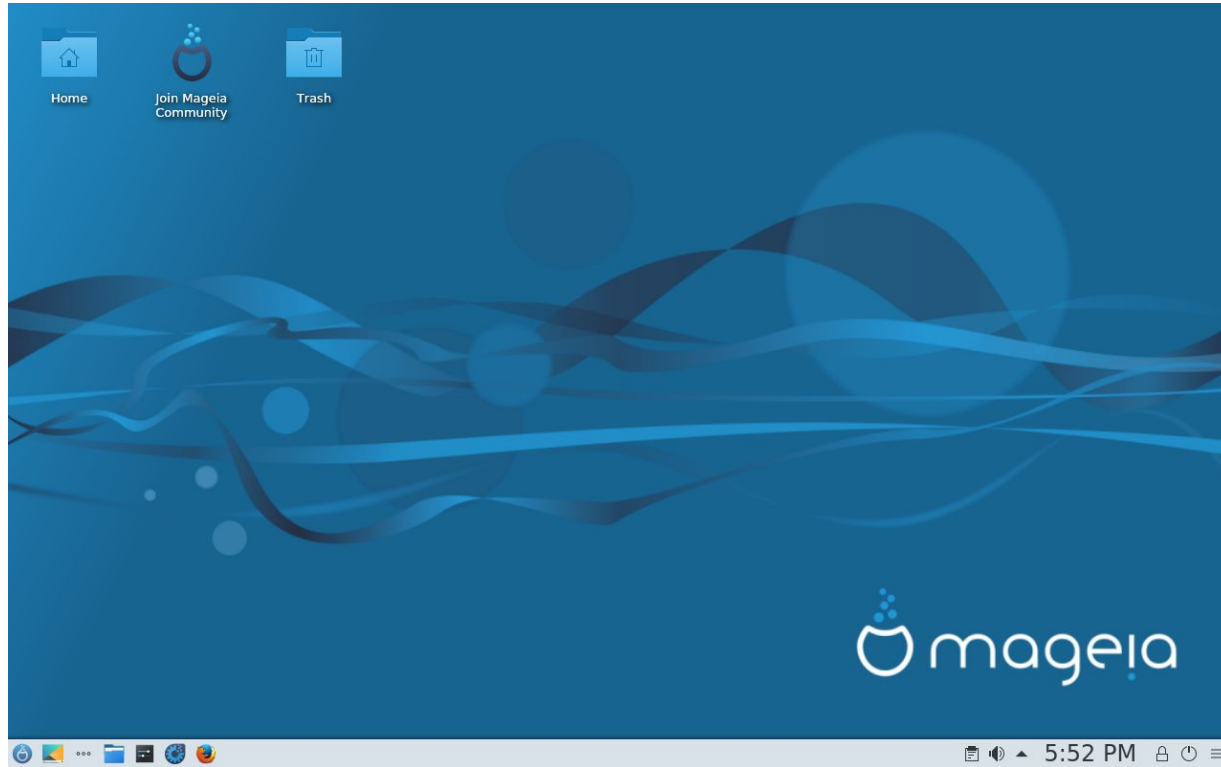
KDE Plasma 5 on Mageia 6

GNOME Desktop Environment

GNOME is the other very large desktop environment project. It was started in 1997 as a response to KDE depending on Qt, which was a proprietary library at the time. It uses GTK+ (originally from The GIMP), and is currently on its third iteration.

GNOME is a much more focused project, though it is certainly not any smaller than KDE. The organization that backs the development of GNOME is the GNOME Foundation. The primary corporate sponsor is Red Hat, who functions in much the same role that Blue Systems does for KDE.

It is notably the default desktop environment in Fedora and Debian, and is the desktop provided in Ubuntu GNOME and SUSE Linux Enterprise. Many other distributions offer it as the default or as an option (such as Mageia, openSUSE, etc.).
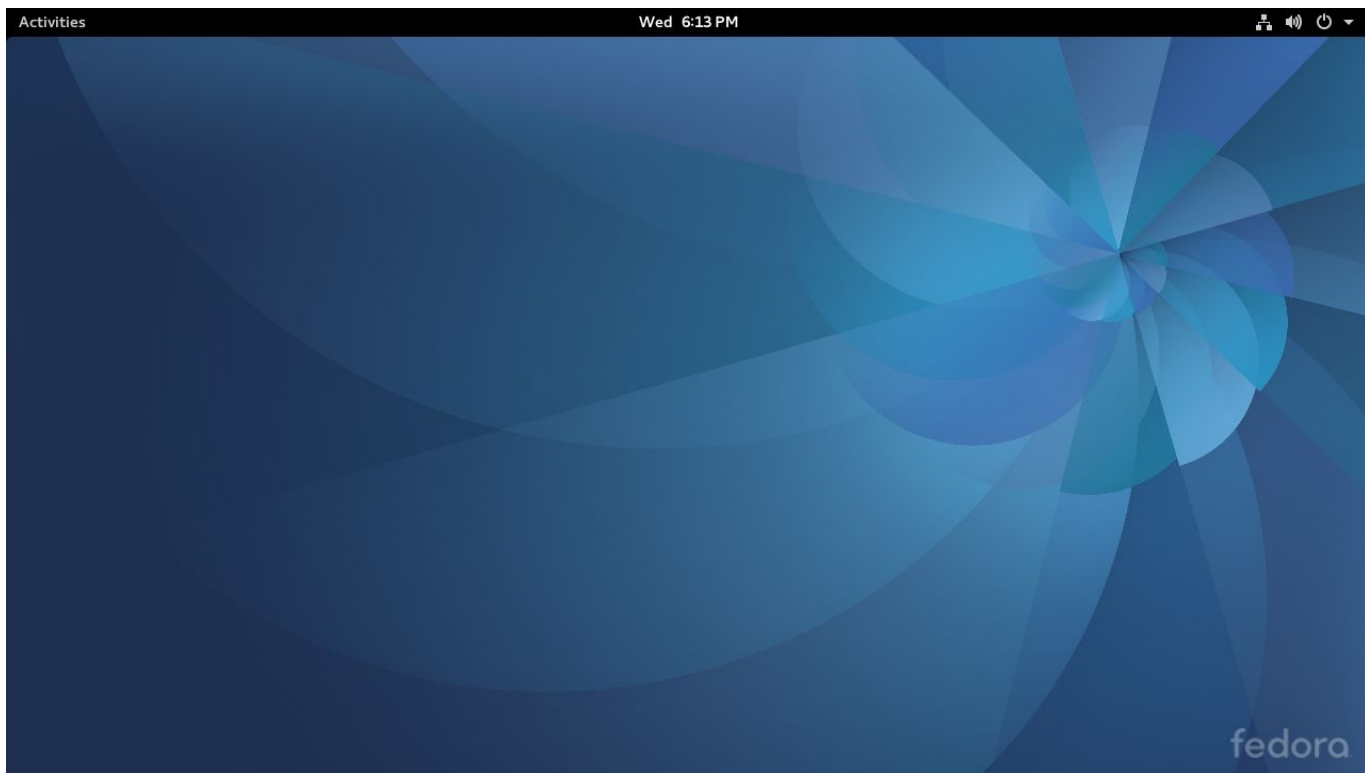
GNOME on Fedora 25

Cinnamon Desktop Environment

The Cinnamon Desktop was created by the Linux Mint team as a response to GNOME 3 and its non-traditional UX in 2011. Originally developed as a series of extensions to GNOME 3, it is now a complete fork of the GNOME Shell and various components.

The Cinnamon Desktop is primarily backed and developed by Linux Mint, along with a number of developers from distributions such as Fedora, Arch, etc.

Linux Mint itself offers a Linux distribution named "Linux Mint" that uses Cinnamon as the flagship desktop environment. It is also available as an option in Fedora, Mageia, openSUSE, and many other distributions.
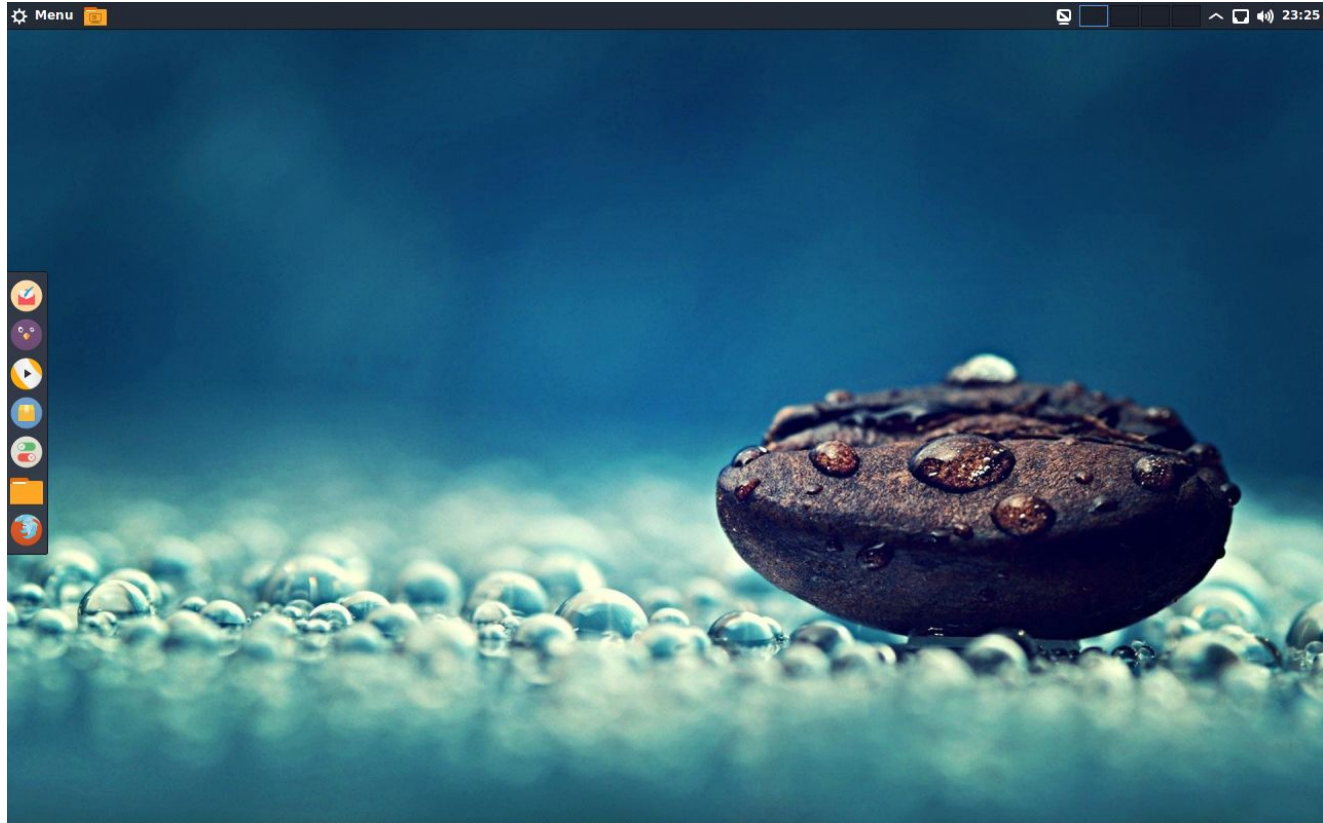
Cinnamon on Korora 25

MATE Desktop Environment

Like Cinnamon, MATE was developed as a response to GNOME 3. In 2011, an Arch Linux user forked GNOME 2 and continued its development independently, as opposed to Cinnamon's forking of GNOME 3 to add more traditional UX.

MATE is a continuation of the traditional GNOME 2 environment, and aside from renaming the libraries and applications, remains largely consistent with that environment.

MATE is the desktop used in Ubuntu MATE, but is also available as an option in most Linux distributions.
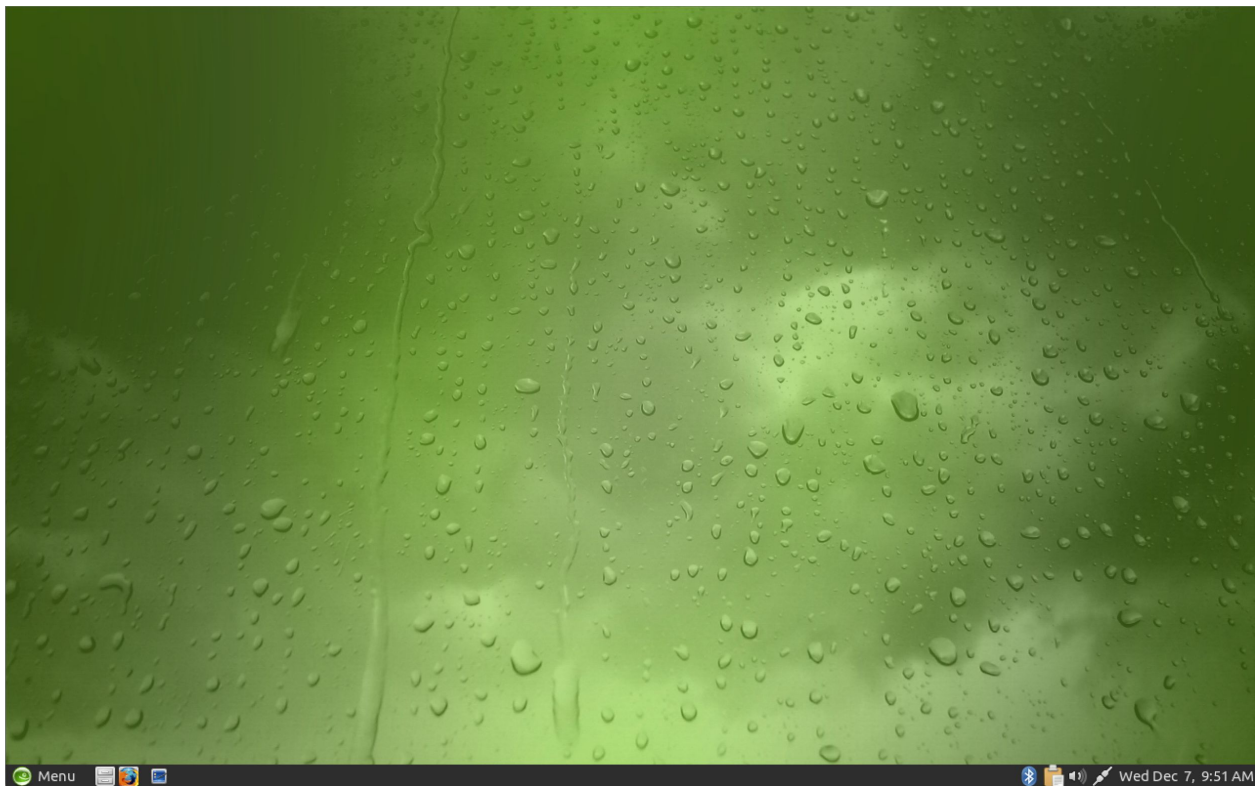
MATE Desktop on openSUSE Leap 42.1

Xfce Desktop Environment

Xfce is one of the oldest desktops, started the same year as KDE. It originally used the XForms UI toolkit (Xfce used to mean "XForms Common Environment"), but now uses GTK+.

Xfce, unlike most desktops, is intended to be very minimal, and the project itself offers few applications.

Xubuntu ships Xfce as the desktop, and most Linux distributions offer it as an option.
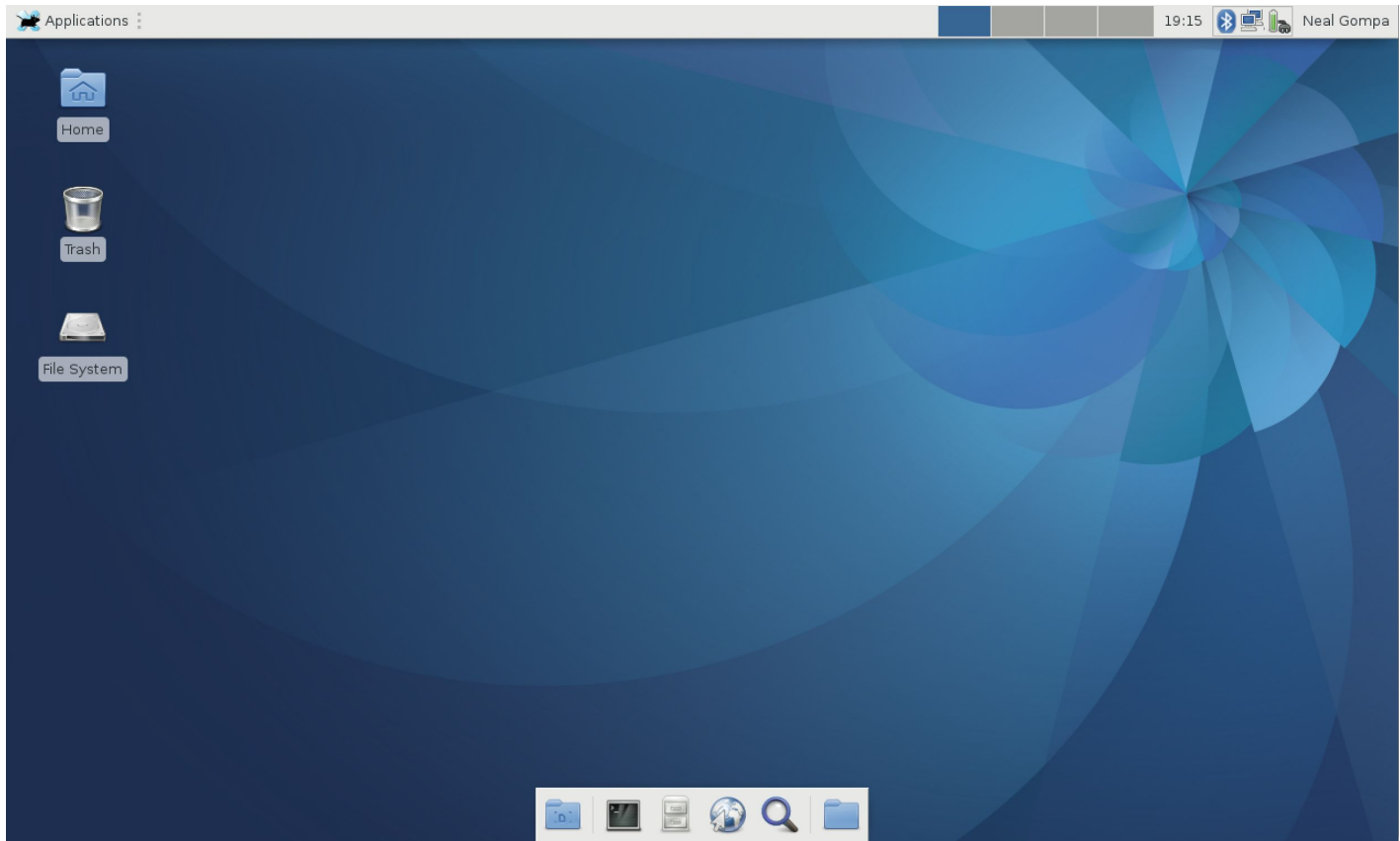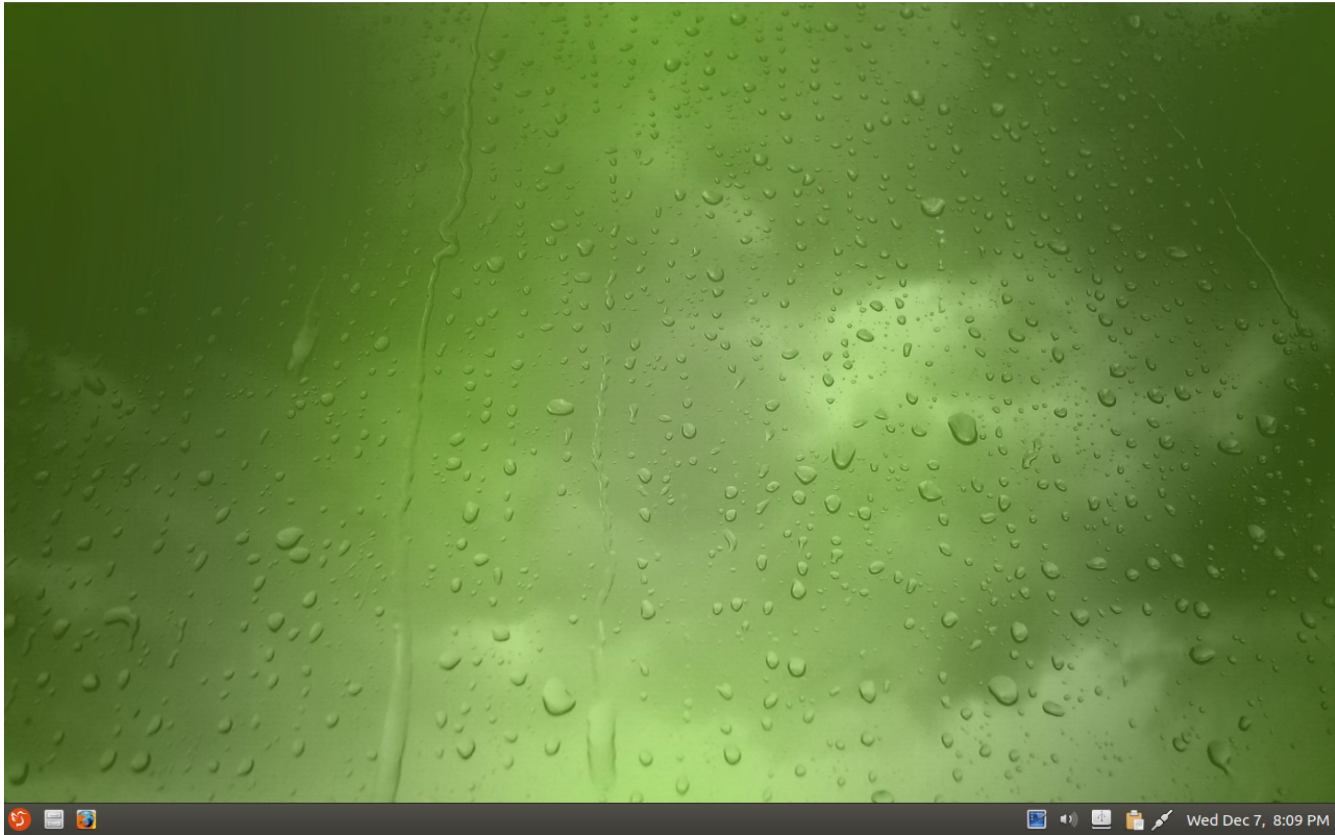
Xfce on Fedora 25

LXQt Desktop Environment

LXQt actually started out as LXDE (the Lightweight X11 Desktop Environment). LXDE was written in GTK+, but instead of transitioning to GTK+3 (what GNOME and Cinnamon uses), they moved to Qt 5 and became part of the KDE ecosystem. LXQt is the result of the merger of LXDE and Razor-Qt projects.

LXQt serves to offer a Qt-based minimal desktop like Xfce does, and is considered to be even more spartan than Xfce.

Most distributions offer it as an option, but there are no distributions offering it as a preferred desktop at this time.

LXQt on openSUSE Leap 42.1

Links to Resources

- KDE: https://www.kde.org/
- GNOME: https://www.gnome.org/
- Cinnamon: http://developer.linuxmint.com/projects.html
- MATE: http://mate-desktop.org/
- Xfce: https://www.xfce.org/
- LXQt: http://lxqt.org/
- Mageia: https://www.mageia.org/
- Fedora: https://getfedora.org/
- Korora: https://kororaproject.org/
- openSUSE: https://www.opensuse.org/
- GeckoLinux: https://geckolinux.github.io/

The End

Any Questions?