

(1a) <b>Operating Systems</b> - Comparison	(1b) <b>Operating Systems</b> - History & Family Tree	(2) <b>Android ROMs</b> - Comparison	(3) <b>Linux Distributions</b> - Comparison & Timeline	(4a) <b>Desktop Environ-ments</b> - Comparison & List	(4b) <b>Desktop Environ-ments</b> - Default DE Time-line	(5a) <b>Web Browsers</b> - Comparison	(5b) <b>Web Browsers</b> - En-gine History	(6) <b>Instant Messengers</b> - Comparison	(7) <b>Cloud, Sync &amp; Email Providers</b> - Comparison	(8) <b>Payment Methods</b> - Comparison
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[← Sitemap](#)

# Comparison & List of Desktop Environments

The below table shows a comparison of the main desktop environments available for Linux and Unix, as well as the macOS and Microsoft Windows for the sake of comparability.

For Linux (and some Unix operation systems), there are the "Big Two" desktops, KDE and GNOME, as well as many smaller ones and the option of running a stand-alone window manager.









The desktop environment "landscape" has fragmented since the controversial initial release of GNOME 3 in 2011, which spawned a number of soft and hard forks as well as newly created desktops that are nevertheless based on some of GNOME technology or which were created out of disagreement with the GNOME developers; these include MATE (a continuation of GNOME 2), Linux Mint's Cinnamon (based on GNOME 3 tech), Solus's Budgie, elementaryOS's Pantheon, pop\_OS!'s COSMIC, Ubuntu Unity's UnityX, Ubuntu Kylin's UKUI.

KDE only had one notable fork, Trinity, which is a continuation of KDE 3.

Other notable desktop environments not mentioned so far include Xfce, LXQt, Deepin Desktop, CDE, Lumina, as well as Enlightenment and its fork Moksha.

[Click here to see an older version of this comparison which includes additional desktop environments \(Pantheon, Deepin, UKUI, CDE, Enlightenment, Trinity, UnityX, and Lumina\).](#) This extended comparison was up to date as of beginning 2022 but will not be updated anymore.

## Comparison of Desktop Environments (short version)

Source: eylenburg.github.io									
Last updated: 7 August 2024									
<div><b>General</b> License First release Forked from Corporate and government backing</div> <div><b>Application suite</b> Legend: KDE app or fork GNOME app or fork uses Qt uses GTK GUI toolkit Window manager Preferred display manager Embedded HTML engine</div> <div>File manager Archive manager Document/PDF viewer Image viewer &amp; management Image editing Text editor Media player Music library Web browser Email client Calendar</div> <div><b>General features</b> Display server support Fractional scaling (for HiDPI monitors) HDR (high-dynamic range) support VRR (variable refresh rate) support Display colour profiles Preferred style of window decorations (SSD/CSD) Theme support, including 3rd-party themes</div>	<b>KDE Plasma</b> 	<b>GNOME</b> 	<b>Xfce</b> 	<b>MATE</b> 	<b>Cinnamon</b> 	<b>LXQt</b> 	<b>Budgie</b> 	<b>Aqua (macOS)</b>  <b>macOS</b>	<b>Windows Shell</b>  
	GPL 1998 - Blue Systems, Canonical, Google, Qt Group, SUSE	GPL 1999 - IBM (Red Hat), Canonical, Google, SUSE, System76	GPL, LGPL, BSD 1997 - -	GPL, LGPL 2011 GNOME 2 -	GPL 2011 GNOME 3 -	GPL, LGPL 2013 LXDE & Razor-qt -	GPL, LGPL 2013 - -	Proprietary 2000 - Apple	Proprietary 1995 - Microsoft
	Qt	GTK	GTK	GTK	GTK	Qt	GTK	Cocoa	WinUI
	KWin	Mutter	Xfwm4	Marco	Muffin	Openbox, KWin, or Xfwm4	budgie-wm	Quartz Compositor	Desktop Window Manager
	SDDM	GDM	LightDM	LightDM	LightDM	SDDM	LightDM	macOS login screen	Windows login screen
	QtWebKit	WebKitGTK	-	-	WebKitGTK	-	WebKitGTK	WKWebKit	Edge WebView2
	Dolphin	GNOME Files (Nautilus)	Thunar	Caia	Nemo	PCManFM-Qt	Nemo (usually)	Finder	File Explorer
	Ark	File Roller	Xarchiver	Engrampa	-	-	-	Archive Utility	File Explorer
	Okular	Papers, Evince	-	Atril	xreader	qpdfview	-	Preview	Edge
	Gwenview, digiKam, ...	eog, Image Viewer, ...	Ristretto	Eye of MATE	xviewer, pix	LXImage	-	Preview, macOS Photos	Windows Photos
	Krita, ShowFoto	GIMP	-	-	-	-	-	macOS Photos	Paint
	Kate, KWrite	GNOME Text Editor, gedit	Mousepad	Pluma	xed	Featherpad	-	TextEdit	Notepad, WordPad
	Dragon, Kaffeine, ...	GNOME Videos (Totem)	Parole	-	xplayer	-	-	Quicktime Player	Windows Media Player
	Elisa, Strawberry, ...	GNOME Music, ...	Xfmpc	-	-	-	-	Apple Music	Windows Media Player
	Falkon	GNOME Web (Epiphany)	Midori	-	-	-	-	Safari	Edge
	KMail, Trojita	Geary, Evolution	-	-	-	-	-	macOS Mail	Outlook for Windows
	KOrganizer	GNOME Calendar	Orage	-	-	-	-	macOS Calendar	Outlook for Windows
	X11 + Wayland	X11 + Wayland	X11	X11	X11	X11	X11	Quartz Compositor	Desktop Window Manager
	Yes	Experimental	Yes	No	Yes	No	Yes)	Yes	Yes
	Yes	No	No	No	No	No	No	Yes	Yes
	Yes	Experimental	No	No	No	No	No	Yes	Yes
	Yes	Yes	No	No	No	No	No	Yes	Yes
	Server-side decorations	Client-side decorations	Server-side decorations	Server-side decorations	Server-side decorations	Server-side decorations	Client-side decorations	Mixed	Mixed
	Yes	Not out of the box	Yes	Yes	Yes	Yes	Yes	No	No

	KDE Plasma	GNOME	Xfce	MATE	Cinnamon	LXQt	Budgie	Aqua (macOS)	Windows Shell
Scheduled theme switch (e.g. dark theme at night)	No	No	No	No	No	No	No	Yes	No
Night light (reduces blue light)	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
Shake mouse to enlarge and find cursor	Yes	No	No	No	No	No	No	Yes	No
<b>Panel elements</b> <small>w/o extensions or hidden settings/tweaks</small>									
Favourited/pinned apps	in app launcher and panel	in "Activities" dash	in app launcher and panel	in app launcher and panel	in app launcher and panel	in panel	in panel	in dock	in start menu and panel
Panel location changeable (e.g. bottom, top)	Yes (all four sides)	No	Yes (all four sides)	Yes (all four sides)	Yes (all four sides)	Yes (all four sides)	Yes (all four sides)	No, but can move dock	No
Panel auto-hide function	Yes	No	Yes	Yes	Yes	Yes	Yes	No, but can auto-hide dock	Yes
Clock/volume/battery/network status/keyboard layout	Yes (all)	Yes (all)	Yes (all)	Yes (all)	Yes (all)	Yes (all)	Yes (all)	Yes (all)	Yes (all)
Notification list (e.g. new e-mail, updates available)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Icons for background apps (e.g. cloud sync, messenger)	Yes	<u>Limited</u>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Toggle between local (in-window) menus or global menubar	Yes (default: local)	No (always local)	Yes (default: local)	Yes (default: local)	No (always local)	No (always local)	Yes (default: local)	No (always global)	No (always local)
Quickly uninstall apps from app launcher (e.g. right-click)	Yes	No	No	No	No	No	No	Yes	Yes
<b>Window management</b>									
Taskbar/dock: toggle between showing windows or apps	Yes	<u>No (shows neither)</u>	Yes	Yes	Yes	Yes	Yes	No (only shows apps)	Yes
Maximize window (without hiding panel/dock/taskbar)	Yes	Yes (right-click)	Yes	Yes	Yes	Yes	Yes	keyboard shortcut only	Yes
Fullscreen (hides panel and other element)	Yes	keyboard shortcut only	Yes (right-click only)	keyboard shortcut only	keyboard shortcut only	keyboard shortcut only	keyboard shortcut only	Yes	No
Minimize	Yes	Yes (right-click)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Show desktop (minimize all windows)	Yes	keyboard shortcut only	Yes	Yes	Yes	Yes	Yes	<u>keyboard shortcut only</u>	Yes
Keep window on top	Yes (right-click)	Yes (right-click)	Yes (right-click)	Yes (right-click)	Yes (right-click)	Yes (right-click)	Yes (right-click)	No	No
<u>Move to other workspace/show window on all workspaces</u>	Yes (right-click)	Yes (right-click)	Yes (right-click)	Yes (right-click)	Yes (right-click)	Yes (right-click)	Yes (right-click)	Drag & drop / No	Only in Task View
Tile windows by moving them to the screen edge ("Snapping")	Yes (½ or ¼ screen)	Yes (½ screen only)	Yes (½ or ¼ screen)	Yes (½ or ¼ screen)	Yes (½ or ¼ screen)	No	Yes (½ screen only)	Yes (½ or ¼ screen)	Yes (½, ⅓ or ¼ screen)
Move/resize windows using Alt (or Meta) + Left/Right Click	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	No/No	No/No	No/No
Show overview of all windows and workspaces	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes
Virtual desktop cube	Yes	No	No	No	No	No	No	No	No
<b>File manager</b>	Dolphin	GNOME Files (Nautilus)	Thunar	Caja	Nemo	PCManFM-Qt	Nemo (usually)	Finder	File Explorer
Icon/column/tree view	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/in side panel	Yes/Yes/in side panel	Yes/Yes/in side panel	Yes/Yes/in side panel	Yes/Yes/in side panel	Yes/Yes/No	Yes/Yes/in side panel
Tabs or split-pane view	Yes/Yes	Yes/No	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/No	<u>Yes/No</u>
Toggle to show/hide hidden files	Yes	Yes	Yes	Yes	Yes	Yes	Yes	keyboard shortcut only	Yes
Sort by: name/type/size/date	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes
Thumbnail support in file manager and <u>file picker</u>	Yes/Yes	<u>Yes/Yes</u>	Yes/No	Yes/No	Yes/No	Yes/Yes	Yes/No	Yes/Yes	Yes/Yes
Type-ahead find in active folder	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Filter files in active folder	Yes	<u>Not really</u>	<u>Not really</u>	No	No	Yes	No	No	No
Recursive file search	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Undo rename or deletion with Ctrl+Z	Yes	Yes	Yes	Yes	Yes	No	Yes	<u>Yes</u>	Yes
Duplicate file options	Keep new/old/rename	Keep new/old/rename	Keep new/old	Keep new/old/rename	Keep new/old/rename	Keep new/old/rename	Keep new/old/rename	Keep new/old/rename	Keep new/old/rename
Create new empy file	Yes	only files from ~/Templates	Yes	Yes	Yes	Yes	Yes	No	Yes
Select multiple files with Ctrl/Shift, and invert selection	Yes/Yes	Yes/keyboard shortcut only	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/keyboard shortcut only	Yes/Yes
Edit, copy or paste folder location/path	Yes	Yes	Yes	Yes	Yes	Yes	Yes	keyboard shortcut only	Yes
Go up a level (to parent directory)	Yes	keyboard shortcut only	Yes	Yes	Yes	Yes	Yes	keyboard shortcut only	Yes
<b>Distribution support</b>									
Number of supporting active distributions ( <u><a href="https://distrowatch.com">Distrowatch.com</a></u> , 04/2024)	66	74	95	54	34	34	14	<i>macOS only</i>	<i>Windows only</i>
Debian	option during installation	pre-selected at installation	option during installation	option during installation	option during installation	option during installation	officially supported		
Ubuntu	default in Kubuntu	default desktop ( <u>modified</u> )	default in Xubuntu	default in Ubuntu MATE	default in Ubuntu Cinnamon	default in Lubuntu	default in Ubuntu Budgie		
Fedora	default in KDE Spin	default desktop	default in Xfce Spin	default in MATE Spin	default in Cinnamon Spin	default in LXQt Spin	default in Budgie Spin		
openSUSE	option during installation	option during installation	option during installation	officially supported	officially supported	officially supported	officially supported		
Arch	<u>option during installation</u>	<u>option during installation</u>	<u>option during installation</u>	<u>option during installation</u>	<u>option during installation</u>	<u>option during installation</u>	<u>option during installation</u>		
FreeBSD	officially supported	officially supported	officially supported	officially supported	officially supported	officially supported	officially supported		
<b>Usage share (estimate)</b>									
<u><a href="https://gamingonlinux.com/user-statistics/04/2024">GamingOnLinux.com User Statistics (04/2024)</a></u>	39.7%	28.6%	7.2%	2.2%	8.0%	0.4%	0.9%		
<u><a href="https://hardwareforlinux.com/trends/02/2024">Hardware for Linux Trends (02/2024)</a></u>	29.7%	42.3%	7.3%	2.0%	8.0%	1.5%	n/a%		
<u><a href="https://arch.no/default-desktop/-/installations/03/2024">Arch (no default desktop) - installations (03/2024)</a></u>	34.6%	21.8%	12.7%	2.0%	3.1%	2.4%	0.6%		

## Full list of desktop environments

Legend: **major currently used desktop environment**, minor desktop, *smartphone user interface*, ~~discontinued/dead~~

- For Unix, Linux, and other Unix-like operating systems
  - EFL toolkit
    - Enlightenment**
    - Moksha (Bodhi Linux)
    - Tizen UI (Tizen OS)*
  - FLTK toolkit
    - ~~Equinox~~/EDE
  - Flutter toolkit
    - Pangolin Desktop UI (dahliaOS)
  - Fyne toolkit
    - FyneDesk
  - GNUSTep toolkit
    - ~~Etoile~~
    - GSDE
    - ~~Nextspace~~
  - GTK toolkit
    - Budgie (Solus)**

- **Cinnamon (Linux Mint)**
  - ~~Consort~~
  - Endless Shell (Endless OS)
  - **GNOME**
  - GNOME Classic
  - GNOME Flashback
  - *GNOME Shell for Mobile*
  - ~~Graphite Desktop~~
  - ~~GPE~~
  - *Hildon (Maemo Leste)*
  - JADE
  - ~~Java Desktop System (Solaris)~~
  - Manokwari (BlankOn Linux)
  - **MATE**
  - Material Shell
  - ~~Maynard~~
  - ~~Mezzo~~
  - Kiran Desktop
  - LXDE
  - Onyx Desktop (Crystal Linux)
  - **Pantheon (elementaryOS)**
  - Pearl DE (Pearl Linux)
  - *Phosh (PureOS)*
  - PIXEL Desktop (Raspberry Pi OS)
  - Regolith Desktop (Regolith Linux)
  - ~~ROX Desktop~~
  - Sugar
  - Unicorn Desktop (Rhino Linux)
  - **UnityX (Ubuntu Unity)**
  - ~~Vera~~
  - XFast
  - **Xfce**
- Iced toolkit
  - **COSMIC (Pop\_OS!)**
- Motif toolkit
  - **CDE/Common Desktop Environment**
  - ~~IRIX Interactive Desktop (IRIX)~~
  - ~~HP-VUE (HP-UX)~~
  - MaXX Interactive Desktop
  - ~~Panorama Desktop~~
- OLIT/Xview toolkit
  - ~~openlook~~
  - ~~Open Windows (Solaris)~~
- Qt toolkit (or forks of Qt)
  - airyx Desktop (airyxOS)
  - ~~BE++Shell~~
  - Cutefish
  - **Deepin Desktop (Deepin Linux)**
  - Draco DE
  - ~~Eloka~~
  - Fly Desktop (Astra Linux)
  - *Glacier UX (Nemo Mobile)*
  - ~~Hawaii~~
  - hello Desktop (helloSystem)
  - ~~innova~~
  - Jing Desktop (JingOS)
  - Katana DE (*fork of KDE Plasma 4*)
  - KDE Liquidshell
  - **KDE Plasma**
  - *KDE Plasma Mobile*
  - ~~Kuartet~~
  - Liri Shell (Liri OS)
  - *Lomiri (Ubuntu Touch)*
  - **Lumina**
  - *Luna Next (Open WebOS)*
  - LWQt
  - **LXQt**
  - Maui Shell (*convergent, for desktop and mobile*)
  - ~~MoonlightDE~~
  - NX Desktop (Nitrox)
  - ~~OPIE~~
  - ~~Papyrus~~
  - ~~Razer-qt~~
  - *Sailfish UI (Sailfish OS)*
  - thedesk
  - ~~theShell~~
  - **Trinity Desktop**
  - **UKUI (Ubuntu Kylin)**
  - ~~Unity 2D~~
- Xlib toolkit
  - *Sxmo*
  - ~~UDE/Unix DE~~
- Other, for X Server or Wayland
  - Fvwm-Crystal
  - ~~Fvwm-Nightshade~~
  - nsCDE
  - ~~Project Looking Glass~~
  - PsychDOS
  - Stacking and compositing stand-alone window managers: 2bwm, 9wm, AfterStep, amiwmm, berry, Blackbox, Compiz, CTWM, cwm, eggwm, evilwm, Fluxbox, Flwm, Fvwm, Goomwwm, IceWM, jbwmm, JWM, Karmen, lwm, Matchbox, MWM, olwm, Openbox, pawm, PekWM, Qvwm, Sawfish, Scwm, sowm, swm, TinyWM, twm, tvtwm, ukwm, UWM, vwm, vtwm, Wind, WindowMaker, WindowLab, Wio, wm2

- Tiling and dynamic stand-alone window managers: Alopex, awesome, Bspwm, dwm, echinus, EXWM, FrankenWM, Herbstluftwm, i3, Ion, Larswm, NotionWM, Qtile, Ratpoison, spectrwm, StumpWM, subtle, Sway, Velox, Wingo, WMFS2, wmii, Worm, xmonad
  - Other, not using X Server oder Wayland
    - **various Android interfaces**, incl. for Android forks
    - **Aqua (macOS)**
    - **Aura Shell (ChromeOS)**
    - ~~Bada GUI (Bada OS)~~
    - Durden
    - egmde
    - *Gala (KaiOS/FirefoxOS)*
    - ~~NeXTSTEP Desktop~~
    - Orbital (Redox OS)
    - ~~Photon (QNX)~~
    - rio (Plan 9 and forks)
    - Screen (QNX)
    - SerenityOS GUI (SerenityOS)
    - skiftOS GUI (skiftOS)
    - **Springboard (iOS/iPadOS)**
    - wm (Inferno)
    - XaAES (FreeMiNT)
    - Yutani (ToaruOS)
- For Windows and Windows-like operating systems
  - ReactOS Explorer (ReactOS)
  - **Windows Shell (Microsoft Windows)**
  - **Workspace Shell (ArcaOS)**
- For AmigaOS and Amiga-like operating systems
  - **Workbench (AmigaOS)**
  - Ambient (MorphOS)
  - Magellan (Icaros)
  - Wanderer (AROS)
- For other still actively developed operating systems
  - Bluebottle GUI (Bluebottle OS)
  - ChrysaLisp GUI (ChrysaLisp OS)
  - DawnOS GUI (DawnOS)
  - DexOS GUI (DexOS)
  - DECWindows (OpenVMS)
  - Essence GUI (Essence OS)
  - Ghost GUI (Ghost OS)
  - HelenOS GUI (HelenOS)
  - KolibriOS GUI (KolibriOS)
  - MenuetOS GUI (MenuetOS)
  - Mezzano GUI (Mezzano OS)
  - MonaOS GUI (MonaOS)
  - **OpenTracker (Haiku)**
  - PhantomOS GUI (PhantomOS)
  - **Pinboard (RISC OS)**
  - Sculpt (Genode)
  - Solar OS GUI (Solar OS)
  - SymbOS GUI (SymbOS)
  - Visopsys GUI (Visopsys)

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► [Click here to show my review of 15 Linux desktop environments, with screenshots and comparison of RAM use \(from 2021, will not be updated anymore\)](#)

Do you have any comments or corrections? [Please drop me an e-mail](#) or [create an issue on Github](#)

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