LINUXVOICE GROUP TEST

LIGHTWEIGHT DISTROS

Mayank Sharma is on the lookout for distros tailor made to infuse life into his ageing computers.

On Test

Linux Lite

URL www.linuxliteos.com
VERSION 2.0
DESKTOP Xfce
Does the second version of the distro does enough to justify its title?

WattOS

URL www.planetwatt.com
VERSION R8
DESKTOP LXDE, Mate, Openbox
Has switching the base distro from Ubuntu to Debian made any difference?

SparkyLinux

URL www.sparkylinux.org
VERSION 3.5
DESKTOP LXDE, Mate, Xfce and others
Multiple flavours with different desktops – is there one for you?

LXLE

URL www.lxle.net
VERSION 14.04
DESKTOP LXDE
What can this Lubuntu-based distro do that its parent cannot?

TinyCore

URL www.tinycorelinux.net
VERSION 5.4
DESKTOP FLWM
Will it live up to its name?

Slacko Puppy

URL www.puppylinux.org
VERSION 5.7
DESKTOP JWM
It's the leading distro for old computers, but can it win this challenge as well?

Lightweight distros

There has always been a demand for lightweight alternatives both for individual apps and for complete distributions. But the recent advent of feature-rich resource-hungry software has reinvigorated efforts to put those old, otherwise obsolete machines to good use.

For a long time the primary migrators to Linux were people who had fallen prey to the easily exploitable nature of proprietary operating systems. Of late though we're getting a whole new set of users who come along with their healthy and functional computers that just can't power the newer release of Windows.

Plenty of hardware is good enough to run the mainstream Linux distros without any issues. However, the modern Linux desktop is a fairly resource hungry beast as well, and your hardware might not have enough juice to power Unity or Gnome 3. In addition to users who have hardware that's been outdated fairly recently, there's another kind who are holding on to their workhorses from the last decade. They usually just use their computer to browse the web, do some text editing, and watch some videos. These users don't need the latest multi-core machines loaded with several gigabytes of RAM or even a dedicated graphics card. However, chances are their hardware isn't supported by the latest kernel, which keeps dropping support for older hardware that is no longer in vogue, such as dial-up modems. Back in 2012, support for the i386 chip was dropped from the kernel and some distros, like CentOS, have gone one step ahead and dropped support for the 32-bit architecture entirely.

New life

In addition to pruning the resource requirements of mainstream software, a large number of open source developers are working to make obsolete hardware usable again. There are lightweight apps that consume a fraction of the resources of their full-featured alternatives and distros that perform blazingly well on low-spec machines. In this group test we look at some of the best distros that are designed from the grounds up to use the meagre hardware resources on dated computers.

DATING HARDWARE

Defining hardware as "older" is tricky. New software is always levering on the pace of hardware developments and rendering even relatively newer hardware obsolete. Examples of these relatively recent attic-ready hardware would be single-core or dual-core AMD Athlons and Intel Pentiums with about 1GB of RAM that they share with onboard graphics. A couple of years ago, mainstream distros would perform adequately on these machines, but not anymore. Nowaday, you need special purpose distros to make good use of such hardware. We tested these distros on a 1.6GHz Intel Atom netbook with 1GB of RAM and on a dual-core 2.1GHz laptop with 2GB of RAM.

Lightweight alternatives

There are two things that are common to every lightweight distro – a lightweight desktop environment and/or lightweight apps. There are lightweight alternatives for every type of software. Office apps, such as the *AbiWord* word processors and the *Gnumeric* spreadsheet, are a popular replacement for mainstream full fledged suites like *LibreOffice* and *Calligra* and are still being

developed. Other featherweight contenders include the *Midori* web browser, *Xpdf* PDF viewer, *Fotoxx* image editor, *CMPlayer* media player, and *App Grid* software centre, among others. Some distros, most notably Puppy Linux, also replace the stock apps with custom ones optimised for the minimal environment they are running under.

Similarly, there are also desktop environments that are lighter on resources

than Unity, Gnome 3 and KDE 4. LXDE and Xfce are two of the popular options that are used by many distros. There's also Mate, which is a continuation of Gnome 2. Then there's Enlightenment, which includes some bling as well. Some distros, instead of using a full-fledged desktop environment, just use window managers such as Openbox. Other lighter but esoteric window manager are IceWM, Fluxbox, FVWM, and JWM.
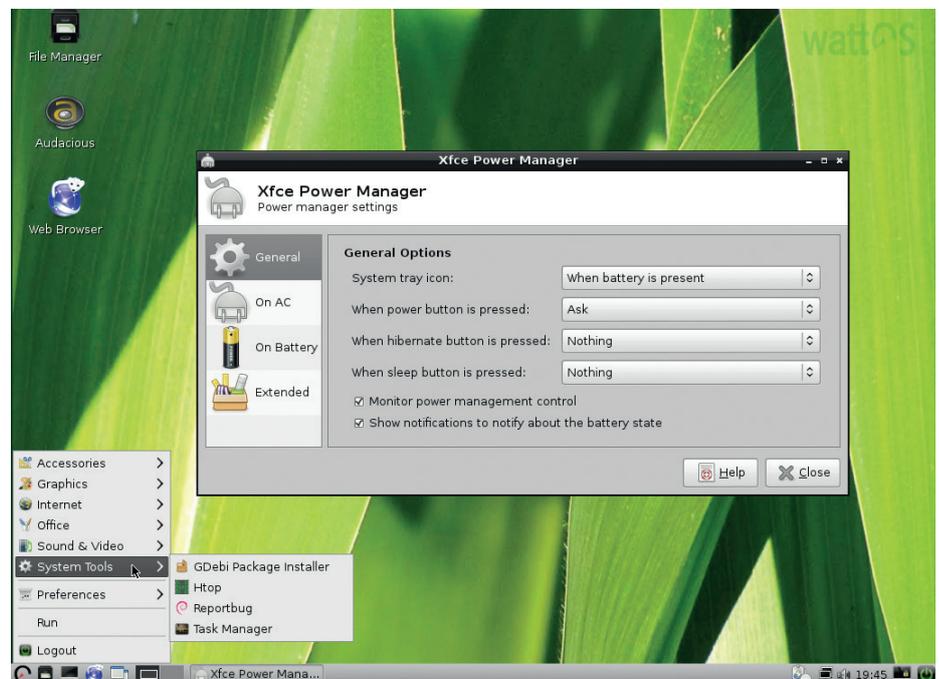
WattOS R8

Desktop computing for cheap.

For a long time WattOS delivered the goodness of Ubuntu to low-powered machines. However, the distro has now switched to Debian and is based on the current stable Wheezy branch. It's available in three flavours: there's one with the Mate desktop and another with LXDE, which both weigh in at around 800MB. There's also an even lighter Microwatt edition.

Being based on Debian, installation duties are handled by Debian's graphical installer, which is pretty simple and straightforward. The WattOS developers have modified the installer with tips borrowed from the LMDE and Point Linux projects, but it still isn't as intuitive as Ubuntu's *Ubiquity* installer, with a manual partitioning step that might confuse new users. Once installed the distro occupies about 3GB of hard disk space.

Both the LXDE and the Mate flavours ship with the *Iceweasel* browser, which is Debian's trademark-stripped fork of the *Firefox* browser. Both flavours also include the *Shotwell* image organiser, *FileZilla* FTP, *Transmission* BitTorrent client, *Audacious* audio player and *Xfburn* media burner. The LXDE flavour also includes the *VLC* media player, which is oddly missing from the Mate version.

Missing in action

One app that was conspicuous by its absence was an office suite. All you have are basic text editors -- Mate has *Pluma* and LXDE has *Leafpad,* and these are both quite stripped down. On the upside though you have the full Debian repository at your disposal that you can install additional apps from via the *Synaptic* package manager.

The distro also includes power management utilities like *PowerTOP* to optimise power consumption.

Both distros were quick off the blocks and we got to the desktops pretty quickly with Mate leading LXDE by a good 10 seconds. Once loaded though LXDE took up about 100MB less RAM than the fast-booting Mate. App launch times were fairly similar and both flavours performed as advertised. Even after several hours their memory footprints remained impressively low.

If you want something lighter still, there's the Microwatt edition. Instead of a full-fledged desktop manager, this flavour uses a customised Openbox window manager in place of the PekWM window manager in earlier versions. The bare-minimum desktop

sports the conky system monitor and a simple panel at the bottom of the screen that houses open windows.

The developers have done a wonderful job in picking up the right apps that don't gorge on resources and don't compromise usability as well. While the distro might be designed for older computers, we wouldn't shy away from recommending it as a lighter Debian alternative for regular use.

> **VERDICT**
> A wonderful distro that could put a spring in the step of any computer.
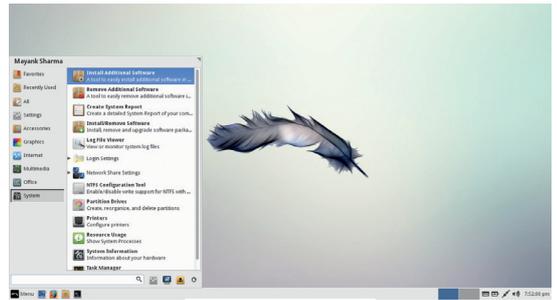> ★★★★☆

Linux Lite 2.0

Can lite be right?

The Linux Lite distro is based on Xubuntu 14.04 LTS, which brings along two very important components -- Xfce 4.11 and the excellent and easy-to-handle Ubiquity installer. One of the first things you'll notice after installation is the distro's beautiful login manager followed by the aesthetically pleasing all-white theme. The desktop is clean and uses the Xfce desktop's Whisker menu. The developers have tweaked the desktop, and the right-click menu includes options to create shortcuts, launch the task manager, and take screenshots.

At first glance, Linux Lite looks and feels like a regular heavy-duty distro. The list of pre-installed apps doesn't include any of the traditional lightweight apps and is instead brimming with the usual suspects such as *Gimp*, *Firefox*, *VLC* and *LibreOffice*. There's also the *Mumble* open-source VoIP software that's often compared with *TeamSpeak*

(it's also preconfigured here to connect to the **LinuxDistroCommunity.com**'s *Mumble* server, so you can engage with other community users immediately.

Another unique aspect of the distro is its collection of well-designed scripts to add and remove programs. The Install Additional Software script gives a list of 25 apps, including *Google Chrome* and *Chromium* browsers, *Google Talk Browser Plugin* to video chat via Google Hangouts, *Dropbox*, Netflix, *Skype*, *Wine*, *PlayonLinux*, and more. There's also a corresponding Remove Software script that'll remove any software installed using the previous script.

There's also the *Synaptic* package manager and the distro is tuned into

Linux Lite is wonderfully stocked for everyday use, but this comes at the cost of relatively sluggish performance.

Ubuntu 14.04's official repository as well as several PPAs. This is also the first release which uses the Linux Lite's own repositories for managing its custom apps. One of these custom apps, the *Lite User Manager*, helps make managing accounts a little easier for new users to comprehend. New users will also appreciate the bundled support and help manual.

> **"One unique aspect of Linux Lite is its collection of scripts to add and remove programs."**

VERDICT

A good distro for someone who's new to Linux, but not necessarily lite.

★★★☆☆

LXLE 14.04

Luxuriously light.

There's a lot of similarity between Linux Lite and LXLE. Both are based on the latest Ubuntu 14.04 LTS release and neither include any of the usual lightweight apps, instead relying on their desktops. In that aspect, LXLE, which is based on Lubuntu and uses the LXDE desktop scores over Linux Lite by trimming almost 10 seconds of the latter's boot time. However, installing LXLE takes a lot longer than other distros. But that isn't a surprise considering it installs almost 2,000 packages.

The desktop is a pretty standard LXDE affair. It includes a panel at the bottom and a Unity-like launcher on the left that reveals itself when you mouse-over that part of the desktop. Some important information about the system is also displayed on the desktop via the *Conky* system monitor. However, the distro uses the malleable *ROXTerm*

as its terminal emulator rather than Lubuntu's *LXTerm*.

The distro is overflowing with apps. Besides the usual apps such as *Gimp*, *Shotwell*, *Claws* email, *FileZilla*, *Pidgin*, *Transmission*, *LibreOffice*, there are several unusual ones like *KeePassX*, *Marble*, *Anki* memory training, *Simple Image Reducer*, *BitTorrent Sync*, *Gitso VNC*, *Linphone*, *Homebank*, *Osmo*, *FB Reader* ebook reader, *BleachBit*, *Florence Virtual Keyboard*, and the *GSpeaker* frontend for espeak.

In stark contrast to many of its peers, the distro also includes several multimedia apps such as *Audacity*, *Arista* transcoder, the *Openshot* video editor and *Minitube* for watching YouTube videos on the desktop. Another pleasant surprise is the inclusion of several games, from simple card games to the Steam client. For package management, the distro

The distro includes a whopping 100 wallpapers, and you can cycle through them with a button in the bottom panel.

includes both the *Lubuntu Software Center*, which is LXDE's answer to the *Ubuntu Software Center*, as well as *Synaptic*. Both are configured to fetch packages from the official Ubuntu repos and several other PPAs. LXLE also includes a graphical PPA manager using which you can add and manage additional PPAs.

VERDICT

Despite its long list of apps, the distro performs well on hardware with limited resources.

★★★★★

SparkyLinux 3.5

Give your computer a jump start.

SparkyLinux includes the *SparkyCenter* settings manager to house its custom apps.

Unlike other Debian-based distros in this group test, SparkyLinux is based on the distro's testing branch (called Jessie) and also borrows Debian's installer. SparkyLinux is available in several flavours, each based on a separate lightweight desktop environment. While the size of the ISO image and the number of installed packages vary from one flavour to another, installing them all took longer than the other distros in this group test.

Another common factor between all the SparkyLinux flavours is its collection of custom apps. There's the *SparkyAPTus* app, which is a simple front-end to the command line **apt-get** and **dpkg** tools. You can use this tool to edit the package repositories, install and remove apps and upgrade the whole system with a single click. *SparkyAPTus Extra* is a new app with which you can install popular apps such as *Dropbox*, *Skype*, *Steam*, *Tor Browser*, and more with a single-click.

The distro also includes custom apps to back up and restore app settings. All you have to do is select the app whose settings you wish to you wish to back up, and the app saves them in a compressed archive. You can then use the complementary Restore app to point to this archive to restore the settings. There's also an app to securely and permanently delete files, a *Wine* wrapper to install Windows **.exe** files, a manager for the *Conky* system monitor and tools to manage users and passwords.

Being based on Debian, the distro also includes Debian's forked trademark-free version of *Firefox* and *Thunderbird*, namely *IceWeasel* and *IceDove*. The browser is equipped with plugins to handle all kinds of content including Flash, QuickTime, DivX, RealPlayer and more.

Shiny desktops

The Enlightenment flavour uses the latest E19 desktop. However, the live environment performed terribly on the netbook and took aeons to install. Even afterwards moving the mouse wasn't smooth and animations were jerky; so, the Mate, LXDE, and Xfce flavours are the distro's leading contenders. You can use them in various languages and they all have a similar looking desktop with the *Conky* system monitor and the *Wbar* quick-launch dock at the bottom.

The distros are also loaded with apps including *LibreOffice*, *PlayonLinux*, *Gimp*, *Camorama* webcam, *Hotot* Twitter client, *gFTP*, *Pidgin*, *Gnome MPlayer*, *RecordMyDesktop* screencaster, *VLC* media and more. For system admins there's *GParted*, *Boot Repair,* a graphical front end to manage systemd and a graphical front end to install windows wireless drivers via *Ndiswrapper* and the *Gufw* firewall.

Other options

The low-fat graphical options that aren't necessarily aimed at older hardware

There are several other distros that use the lightweight desktops that are often included on the distros we've tested here, not because of their size benefits, but for their similarity to the classic desktop metaphor, such as the Mate-powered Debian-based Point Linux.

Another lightweight distro is Elementary OS, which uses its own custom desktop environment along with a host of other custom tools, and is popular for its Mac OS X-like look and feel. However, the distro is designed primarily as a replacement for Windows and Mac, and wouldn't perform well on dated hardware.

Some distros – most notably Ubuntu – have official spins based on LXDE and Xfce, namely Lubuntu and Xubuntu, that are designed for hardware that doesn't have the power to run the main edition. There's also Trisquel Mini (a cut-down version of Trisquel, the distro made entirely with free software – even the non-free elements of the Linux kernel have been removed) for the free software purists, and VectorLinux Light, which uses JWM and Fluxbox. Another distro that uses Fluxbox is the Debian-based AntiX, which also relies heavily on custom tools.

The SliTaz distro also uses a bunch of custom tools but needs to be configured and set up before it can be used as a functional desktop. Finally, there's Porteus, which is primarily designed for installation on removable mediums like USB disks and CDs, but can also be installed on to a hard disk. The distro is small because of its modular nature and incredibly fast since it runs from the RAM, but it does involve a learning curve.

Check out PepperMint Linux if your bandwidth is good enough that you can live off web apps.

TinyCore 5.4 vs Puppy Linux 5.7

The most esoteric distros of the lot.

These two distros are arguably our first choice for powering computers that are light on resources. However, both distros are designed for advanced users, TinyCore more so than Puppy. Also, while both distros will revive literally any computer, their approach to addressing the problem is different.

TinyCore's sole developer, Robert Shingledecker was earlier involved with the once-popular but now-dormant Damn Small Linux project. The distro is available in three flavours. There's a miniscule 9MB core edition designed for servers, followed by the recommended TinyCore edition that weighs in at 15MB, and a 72MB CorePlus edition that has additional drivers for wireless cards, a remastering tool and internationalisation support.

True to its name, TinyCore bundles just a terminal, a text editor, and an app launcher on top of the light-weight FLWM window manager. It has a control panel to manage bootup services and configure the launcher. If you need anything else, you'll have to pull it in using the distro's package manager, including the installer if you want to install the distro full-time on to your hard disk.

Due to its minuscule size, TinyCore boots blisteringly quickly. But the distro's stellar performance comes at the price of usability. For starters, you'll be spending quite a lot of time with its package manager, which isn't the most intuitive in the business. You'll also have to browse through its documentation to familiarise yourself with the distro's peculiarities, irrespective of your experience with Linux.
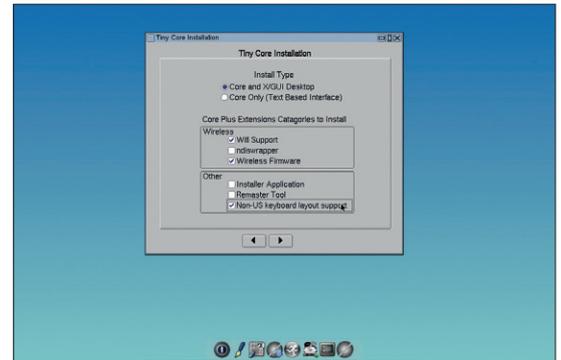
Puppy Linux

Puppy Linux's approach is in stark contrast to TinyCore. The project currently has three official versions. There's Wary Puppy, which is designed especially for older hardware, followed by Lucid Puppy, which is built from Ubuntu's binary packages; and Slacko Puppy, built from Slackware. Slacko is the recommended distro and the current 5.7 is built on of Slackware 14.

Instead of a full-fledged desktop manager, Slacko uses JWM, which is one of the lightest window managers. Installation is handled by Puppy's custom installer, which is well documented but has enough peculiarities to intimidate first-time users. For starters it lacks any automated partitioning tool and instead fires up *GParted* for the user to manually format the disk.

To its credit though, *GParted* is very verbose and each step has enough documentation for the user to carry out the task at hand. Also, once the installation has completed, users will have to manually invoke a tool to install the *Grub* bootloader.

There's no beating Puppy for out-of-the-box functionality and there's an app for virtually every task that you
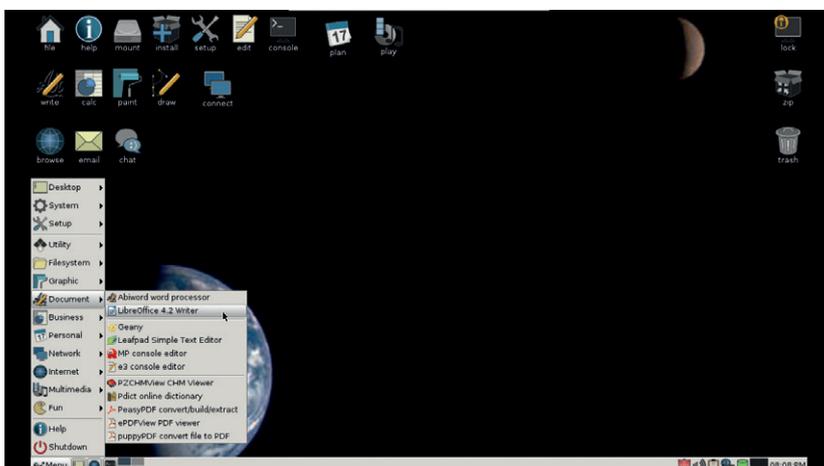

TinyCore includes a remaster tool with which you can create your own remix of the distro.

can perform with a desktop computer. However, most of these are Slacko's own custom apps instead of the popular ones that users are familiar with. Slacko has all kinds of multimedia apps include graphics viewers and creators and apps to playback, edit and even create multimedia. Furthermore there are apps to block website ads and for internet telephony, a podcast grabber, a secure downloader, a DVD burning app and lots more. The distro

"There's no beating Puppy Linux Slacko for out-of-the box functionality."

ships with several multimedia players, including Gnome *MPlayer*, to play all sorts of media formats. The included *Firefox* browser is equipped with all kinds of plugins and the distro also has a custom app to download and install the Flash plugin.

Puppy also scores for its ample documentation. Slacko bundles help documentation on several topics such as working with *Microsoft Office* files, how to add codecs, software and more and contains links to the documentation pages for most of the apps in its menus.

Puppy is very explicit in its instructions and verbose in its output.

VERDICT

TinyCore: Ideal for all kinds of hardware but setting it up is an involved process.
★★★☆☆

Slacko Puppy: One of the lightest around, but loses out for relying on its custom apps.
★★★★☆

OUR VERDICT

Lightweight distros

If this were a group test of distros specifically for older hardware, then Slacko Puppy would have been top dog followed by TinyCore, which is lighter but has a more involved setup process. However, the real test of a lightweight distro is on a machine that's not necessarily old, just not adequately stacked. This is why we rated the distros based on their performance on the dual-core netbook, and the table below reflects numbers as measured on this computer.

WattOS Mate edition was quick off the blocks, but lacked any useful apps. The LXDE edition of the distro does include *VLC* but loses snappiness. We've rated it lower than the slow-starting LinuxLite because at least the latter welcomes the user to a much richer desktop experience. In fact, LinuxLite would be a good distro to introduce new users to Linux.

This group test would have easily been won by LinuxLite. It's one of the fastest distros and loads to a very usable desktop straight out of the box. But it loses out to SparkyLinux despite being faster because of its memory usage,

which is almost twice that of the winner. However, if you have the RAM to spare, then LXLE is our favourite LXDE-based distro around and it's even faster than SparkLinux's LXDE flavour.

Sparktastic

SparkyLinux is available in a number of editions with almost every lightweight desktop environment and window manager. But the performance varies greatly between its various editions. The Enlightenment edition is fastest but lacks any real apps, and also felt lethargic, much like the Xfce flavour. The mouse movement on both editions was jerky, and navigating through the menus wasn't smooth with the sub-menus revealing themselves only after a brief pause.

The Mate and LXDE editions were very usable and highly recommended. On these editions, you could further trim the boot times by tweaking some defaults, like disabling the *Wbar* panel at the bottom. Even without any tweaks, the Mate edition of the distro offers the right compromise between boot times, memory footprint and pre-installed apps.

1st Sparky Linux 3.5 Mate
Version 2.0

www.sparkylinux.org
The perfect balance of speed and functionality in this Mate powered distros that's chock-full of apps.

2nd LXLE 14.04
Version R8

www.lxle.net
A close second to Sparky Linux and the best lightweight distro based on the LXDE desktop.

3rd Linux Lite 2.0
Version 3.5

www.linuxliteos.com
The distro works well to free up resources on newer machines but doesn't feel comfortable on older ones.

4th WattOS R8
Version 14.04

www.planetwatt.com
The Mate edition of this distro boots faster than all others but lacks any meaningful apps.

5th Slacko Puppy 5.7
Version 5.4

www.puppylinux.org
Our favourite distro for revising older computers, but it loses out in this challenge for its reliance on its custom apps.

6th TinyCore 5.4
Version 5.7

www.tinycorelinux.net
The lightest Linux distribution of them all, it loses out for its involved setup process.

	Boot time	Used memory	Total Packages	Desktop Environment	Package Management	Office Suite	Multimedia app
Linux Lite 2.0	41.2s	501 MB	1389	Xfce 4.11	Synaptic	LibreOffice	VLC
WattOS R8 Mate	14.6s	332 MB	1125	Mate 1.8	Synaptic	None	None
WattOS R8 LXDE	23.4s	231 MB	1118	LXDE 0.5.5	Synaptic	None	VLC
LXLE 14.04	34.5s	775 MB	1931	LXDE 0.5.6	Synaptic	LibreOffice	Several
Tiny Core 5.4	7.5s	46 MB	—	FLWM	Custom	None	None
Slacko Puppy 5.7	17.2s	112 MB	333	JWM	Custom	AbiWord, Gnumeric	Gnome Mplayer
Sparky Linux 3.5 e19	31.6s	285 MB	1267	Enligtement e19	Synaptic	None	None
Sparky Linux 3.5 Mate	37.2s	357 MB	1894	Mate 1.8	Synaptic	LibreOffice	Several
Sparky Linux 3.5 LXDE	41.3s	342 MB	1994	LXDE 0.5.5	Synaptic	LibreOffice	Several
Sparky Linux 3.5 Xfce	38.2s	418 MB	2019	Xfce 4.10	Synaptic	LibreOffice	Several