

# 3 Open Source Software

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## Open Source Software

For most computer users, there are two alternatives regarding their working environment: either one works on a PC and uses Windows, or one works on an Apple device and uses macOS or iOS. Both variants have in common that one works with proprietary software. In the context of software, proprietary means that it is manufacturer-specific software whose source code is secret.

Alongside these well-known operating systems and the software ecosystems built upon them, a parallel universe of Open Source Software exists. While Open Source operating systems lead a niche existence on desktop computers, they represent the majority on servers, largely unnoticed by the general public. Open Source software also enjoys a certain popularity in the field of education.

### What is Open Source Software

Open Source Software (OSS for short) involves two aspects:

1. The source code of the software is public. This allows the functionality of the software to be examined.
2. Open Source software can be freely used, redistributed, **and** modified.

This is to be distinguished from Freeware. Freeware is software that may be used without having to pay for it. However, the source code is not accessible and (which would hardly be possible anyway due to the hidden source code) may not be modified.

## Use of Open Source Software

The most well-known use of Open Source software is the employment of Linux as a server operating system. AWS, Amazon's cloud computing product, not only offers customers virtual Linux servers<sup>1</sup>

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<sup>1</sup>"Amazon Linux 2023," Amazon Web Services, Inc., accessed February 21, 2026, <https://aws.amazon.com/linux/amazon-linux-2023/>.

but also runs internally on a specialised Linux system.<sup>2</sup> Microsoft's counterpart, Azure, runs internally on a Windows Server system; however, the solutions most frequently purchased by customers are also Linux servers.<sup>3</sup>

Supercomputers, such as the Alps Supercomputer (currently — February 2026 — number 8 on the world rankings of the most powerful computers), also run with Linux as their operating system.

Android is likewise a variant of Linux and is therefore based at its core on Open Source software.

However, Open Source software is particularly widespread in the countless chips of smart devices, which form the basis of the Internet of Things.

## Examples of Open Source Software

Well-known examples of established Open Source software include the Firefox browser and the Python programming language. These two examples show that Open Source software performs just as well as its proprietary counterparts in many areas. With a market share of approximately 3% in 2025, Firefox is admittedly only a shadow of its former self. Nevertheless, Firefox remains a well-known and established browser. In contrast, according to the Tiobe ranking,<sup>4</sup> Python is by far the most significant programming language with a share of a good 20% of search queries<sup>5</sup>.

## Open Source Licences

One must distinguish between different Open Source licences. The strictest principle is referred to as Copyleft. Licences following this principle require that all products based on such licensed software must also be provided with a Copyleft. This stands in contrast to the usual understanding of Copyright, with which authors generally seek to restrict the use of their intellectual property. An example of this licence is the GNU General Public License (GPL). However, there are also Open Source licences that allow largely free use, modification, and redistribution, particularly in proprietary applications. An example of this is the MIT Licence (named after the Massachusetts Institute of Technology, MIT).

## Business Models Based on Open Source Software

Contrary to widespread assumptions, it is possible to make money with software that is provided to users without payment. Many of the corresponding business models are based on the fact that companies need consultancy for the deployment of their IT infrastructure — regardless of whether it involves proprietary software or Open Source software. Software almost always needs to be adapted

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<sup>2</sup>“Leichter Hypervisor – AWS Nitro System – AWS,” Amazon Web Services, Inc., accessed February 21, 2026, <https://aws.amazon.com/de/ec2/nitro/>.

<sup>3</sup>Suhuruli, “Einführung in den Azure Linux-Containerhost für AKS,” accessed February 21, 2026, <https://learn.microsoft.com/de-de/azure/azure-linux/intro-azure-linux>.

<sup>4</sup>“TIOBE Index,” TIOBE, accessed February 21, 2026, <https://www.tiobe.com/tiobe-index/>.

<sup>5</sup>Regarding criticism of the Tiobe Index, cf. [Wikipedia on Tiobe](#)

to the specific circumstances of the respective company. Money can be earned through these adaptation services.

Another business model — though not specific to Open Source software — is the so-called Freemium model. In this case, part of the service is offered for free, while the full range of functions is subject to a fee. Zotero represents an example of this model. Zotero is fundamentally free to use. However, if one wishes to synchronise more than a given maximum of data, a fee must be paid for the corresponding storage space.

Other models differentiate between private and commercial use. Private use is then free of charge, whereas a licence fee must be paid for commercial use.

## **Outlook**

A deeper engagement with Open Source software arises from the assignment in the following section.