

YUNO HOST

**General presentation
of the YunoHost and Internet Cube projects**

February 1st, 2019

Introduction

YunoHost is a **free and open-source server distribution aiming at simplifying self-hosting** and democratizing it. It promotes Internet decentralisation and user control. We consider that the ability to self-host one's data and services a **corner stone of a more private and user-centric Internet**. We believe that successfully building the decentralised Internet implies to reduce the technical and human costs involved. It must be **accessible and done by the general public, and not just a tech elite**.

The goal of the project is therefore to make managing a server as accessible and simple as having a desktop computer. Our current community is composed of various user profiles: non-technical users, amateur sysadmins, small communities, and IT professionals... Most of them are driven by the current state of privacy online and are involved in various projects advocating Internet decentralisation and user autonomy. YunoHost tries to satisfy the needs of those different of groups, but before all values simple and clean user experience, and a reliable default configuration over customization.

YunoHost is **based on Debian GNU/Linux**. Its setup includes basic services for the operation of a server, and in particular a **fully functional mail stack** and XMPP stack. One of the most important features of YunoHost is **the ability to easily deploy FLOSS web applications in a few clicks** without technical knowledge and manipulations, all those applications logins being linked together through a built-in single-sign-on (SSO).

The project is also tightly related to **the Internet Cube project**: a plug-and-play ARM-based computer which is preconfigured with YunoHost, a VPN client, and WiFi broadcasting—allowing people to **easily start self-hosting and setup a privacy-enhanced internet access** that bypasses commercial ISP's non-neutral connections and surveillance. The Internet Cube is distributed by some non-profit alternative, associative, members-driven ISPs from the FDN federation to provide neutral VPN connections to its members.

YunoHost is a stable project, started in 2012, with an already established and active community and governance. But the goal of seamless server management for everyone is ambitious and far from achieved. We still need to develop essential applications that will allow users to take the control of their privacy and their data to the next level. The reason of this application is that we have the feeling that **we are at the limit of what our volunteers contributors can deliver**. We hope that **paid development time can allow the project to be more sustainable** and allow us to deliver new important features to create a more robust, safer and affordable self-hosting experience faster and innovative solutions for users to protect their privacy.

1. Spirit of the project

1.1 Context

The Internet has been the cornerstone of many technological and societal developments in the past decades. Its openness and its versatility allowed many people to create, build and develop new ways to communicate, create, work and live together. It also allowed the emergence of giants such as Google, Amazon, Facebook, Apple, Microsoft (hereafter GAFAM) and their business model built on the harvesting of user personal data to fund their centralised services, nowadays called “surveillance capitalism”.

Moreover, a few years ago, the Snowden Revelations showed how the global mass surveillance has gone well-beyond the simple purpose of fighting terrorism, and how it is partially enabled by the mainstream use of GAFAM’s centralised services. The result of both these elements is that nowadays, it is practically impossible to use online services without every steps being tracked, surveilled and probed. The core nature of this status-quo undermines our privacy, our rights and freedom, and more generally the balance of power in our society.

1.2 Privacy through independence

Self-hosting and YunoHost are a direct answer to the GAFAM hegemony, as it allows the general public to take back control of the services they use. People should not have to be forced to rely and trust commercial third-parties with handling their personal email, documents, images, music, and social networking. Instead, by being able to have and manage their own server, people effectively emancipate themselves from those centralised services, and regain control over their personal data and metadata, and therefore of their intimacy online.

1.3 Freedom through interoperability

Centralisation also means that a handful of large tech companies can dictate the rules, effectively creating walled garden in which people slowly become captive. In contrast, a more decentralised internet, built upon Free, Libre and Open-Source software (hereafter FLOSS), also encourages diversity and interoperability. This is a necessary condition for people to effectively have the freedom to choose what services to use. This is among the reason why applications and services installable through YunoHost are FLOSS.

1.4 Catalysing the building of the decentralised internet

But decentralisation, and the interoperability and freedom that comes with it, can only become effective if its adoption goes beyond a critical mass. As long as it remains marginal, centralised and proprietary services can still impose their terms and refuse interoperability. If we are to build a decentralised Internet, we must therefore facilitate its construction by reducing the

technical and human cost involved. This is yet another motive for the core goal of YunoHost to reduce the complexity of server administration: beyond personal servers, it should also allow the creation of a large number of small-scale organization (c.f. the CHATONS and Libre Hosters projects) that provide online services to people who do not practice self-hosting. This is also relevant considering the emergence of federated social networks which, for it to be meaningful, requires to have instances easily deployable and maintainable on the long-term.

2. Technical status and features

2.1 Overview

To achieve its goal, YunoHost has a default setup: a web server (Nginx), an SSH server (openSSH), a firewall, fail2ban, PHP, Mariadb, an XMPP server and **a fully functional mail stack** (including an SMTP server (postfix), an IMAP server (dovecot), a spam filter (Rspamd) and DKIM configuration) and a central authentication service using a built-in SSO relying on openLDAP.

In opposition to most other projects, YunoHost works by automating what a system administrator would have done by hand, instead of looking at containers and building abstractions on top of it. This allows to keep the whole distribution **lightweight**, so that **it can be installed on an ARM board with as few as 8 Go of storage and 256 MB of RAM**, and yet still be able to host a few apps decently. Being able to run on modest devices means for us that YunoHost is affordable and accessible to anyone - in addition to ecological concerns.

YunoHost defines a set of abstractions such as users, domains, applications, services, and backups. The administrator of the server can use the web administration interface (or an equivalent command line interface) to easily manage those aspects. For instance, the administrator can add users which automatically get a mailbox, an XMPP account, and access to some apps. The administrator can also obtain the recommended DNS configuration for a domain (or in some cases get it automatically configured), and **install a Let's Encrypt certificate with a couple of clicks**.

On top of this default configuration, web apps and other services can be packaged and integrated easily. The administrator can browse the app catalogue and **install any app conveniently**. Once the installation is complete, **the app can be used immediately** by existing users. Thanks to SSO/LDAP integration, users may only need to log in once (in the user portal) to reach all applications. Applications may later be upgraded, backed up and restored by the administrator, just like the rest of the system.

2.2 Features summary

- Lightweight - can be installed on an ARM board, an x86 computer, or a VPS with only 256 MB of RAM and a handful of Go of storage
- Based on GNU/Linux Debian
- Fully FLOSS under aGPLv3+
- Multi-users, multi-domains
- Administration through a clean and simple web interface, or through a feature-equivalent CLI
- Rich application catalog (~20 official, ~100 community) which can be installed in a handful of clicks
- Unified connection to all apps through the user portal (SSO)
- Fully functional mail stack, out of the box
- An instant messaging (XMPP) server
- Let's Encrypt certificates installable in a handful of clicks
- Backup/restore system
- Decent security practices (firewall, fail2ban,...)
- Free and auto-configured dynDNS domain (nohost.me, noho.st, etc.)
- Hackable by technical users

3 Conclusion

YunoHost is an ambitious and complex project. The project aims to democratize self-hosting, but must first face a general lack of basic understanding of computers and the Internet in the general public. For people to realize the potential of self-hosting and effectively start practicing it, **YunoHost must be a pedagogical project** and, as it is aimed for beginners, it must be **secure by default** as well.

Automatizing pieces of system administration brings various challenges related to the robustness of the system, its weight, and its security - especially considering that YunoHost aims to remain a hackable system which users may customize. But let's summarize by saying that **creating such a complex tool that people can trust is a huge technical challenge in itself.**

YunoHost also aims to meet the user's needs and demands. This implies the developers community to be dynamic, reactive, and put **significant effort in keeping the project, and especially applications, up to date with the latest development.** This is for instance regularly the case with new Nextcloud versions or packaging apps which are still in experimental/early state such as Funkwhale or Pixelfed.

With the success of the Internet Cube in France and the lessons learned from the project so far, we currently plan to develop a new generation of Internet Cube, more affordable, robust and well integrated with YunoHost. As for the rest of the YunoHost project, it should also be promoted outside of the existing French community.

Lastly, YunoHost, like several other FLOSS project, aims to remain a free, independent, ethical and non-commercial project. This, of course, raises the question of the **sustainability of the project, considering that relying exclusively on free volunteer work is risky on the long term.**