Nextcloud 13: How to Get Started and Why You Should

Nextcloud could be the first step toward replacing proprietary services like Dropbox and Skype.

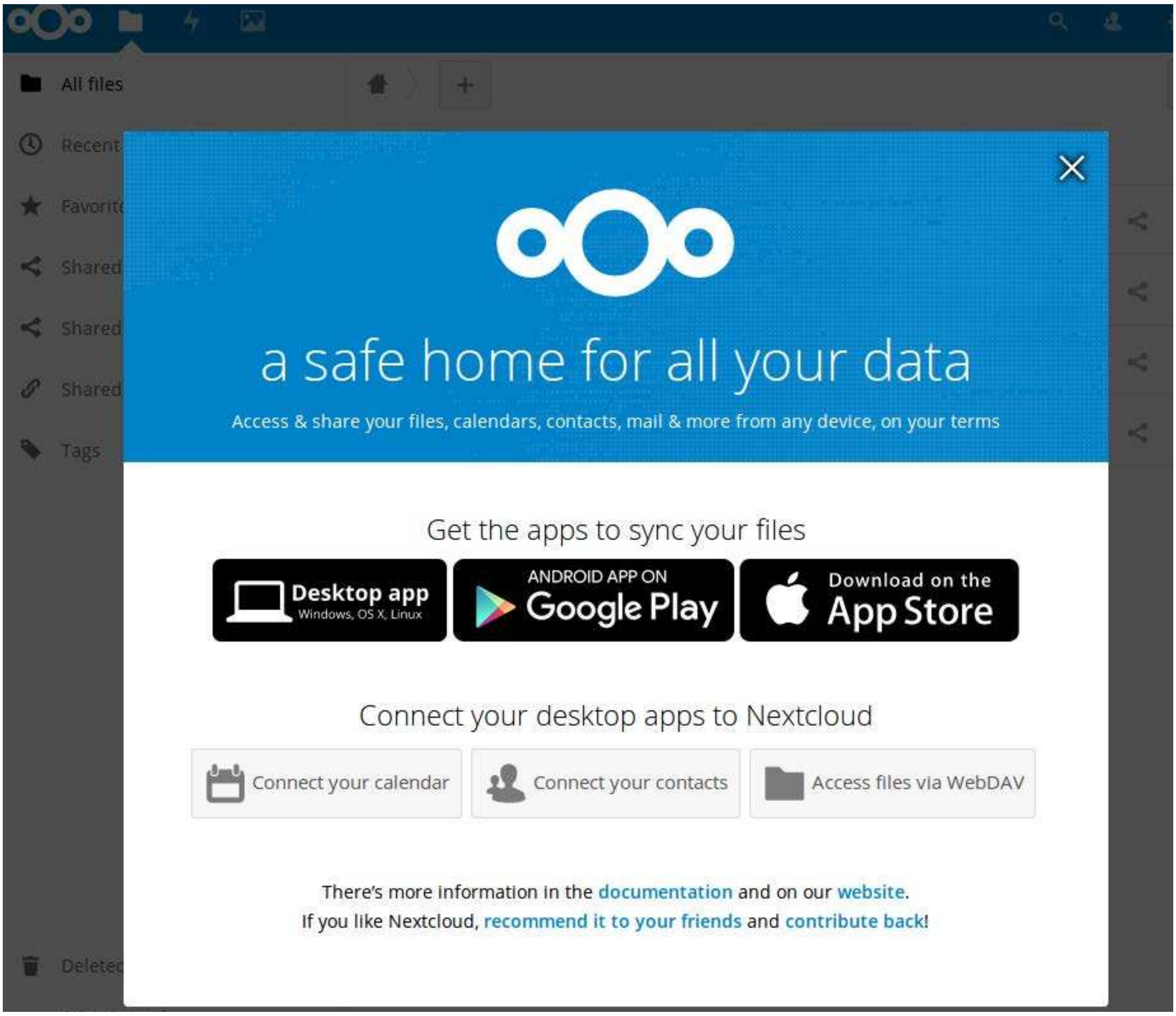
By Marco Fioretti

In its simplest form, the Nextcloud server is "just" a personal, free software alternative to services like Dropbox or iCloud. You can set it up so your files are always accessible via the internet, from wherever you are, and share them with your friends. However, Nextcloud can do so much more.

In this article, I first describe what the Nextcloud server is and how to install and set it up on GNU/Linux systems. Then I explain how to configure the optional Nextcloud features, which may be the first steps toward making Nextcloud the shell of a complete replacement for many proprietary platforms existing today, such as Dropbox, Facebook and Skype.

Why Nextcloud and Not ownCloud?

Nextcloud, whose version 13 was released in February 2018, was spun off the popular ownCloud project in 2016, out of licensing and other disagreements. See the Resources section for some of the most complete feature-by-feature comparisons between Nextcloud and ownCloud. The most basic capabilities are still almost identical, two years after the fork. Some of the functions described here, however, are easier to integrate in Nextcloud than in its ancestor. In addition, my personal reasons for recommending Nextcloud over ownCloud are the following:



a safe home for all your data

Access & share your files, calendars, contacts, mail & more from any device, on your terms

Get the apps to sync your files

Connect your desktop apps to Nextcloud

There's more information in the documentation and on our website.
If you like Nextcloud, recommend it to your friends and contribute back!

Figure 1. A safe home for all your data that all your devices can reach—that's what Nextcloud wants to be.

- Licensing and pricing policies: all the official components of Nextcloud are both free as in freedom and as in free beer. You pay only for support and update services. That's not the case with ownCloud.

- Long-term roadmap: at the moment, ownCloud seems to be more focused on corporate customers and more relevant for investors, while Nextcloud seems to be more focused on extending "direct" user-to-user communication and cooperation features.

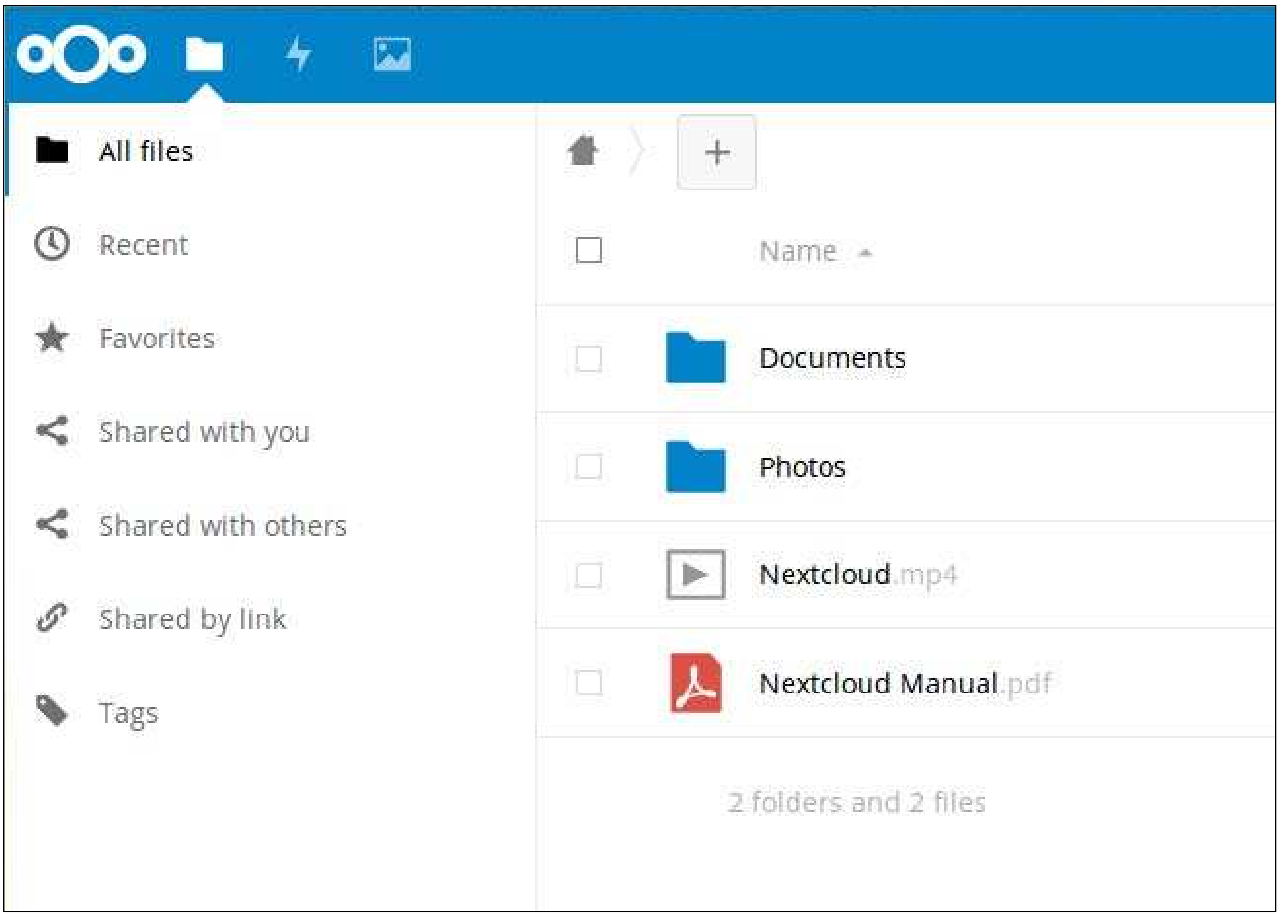


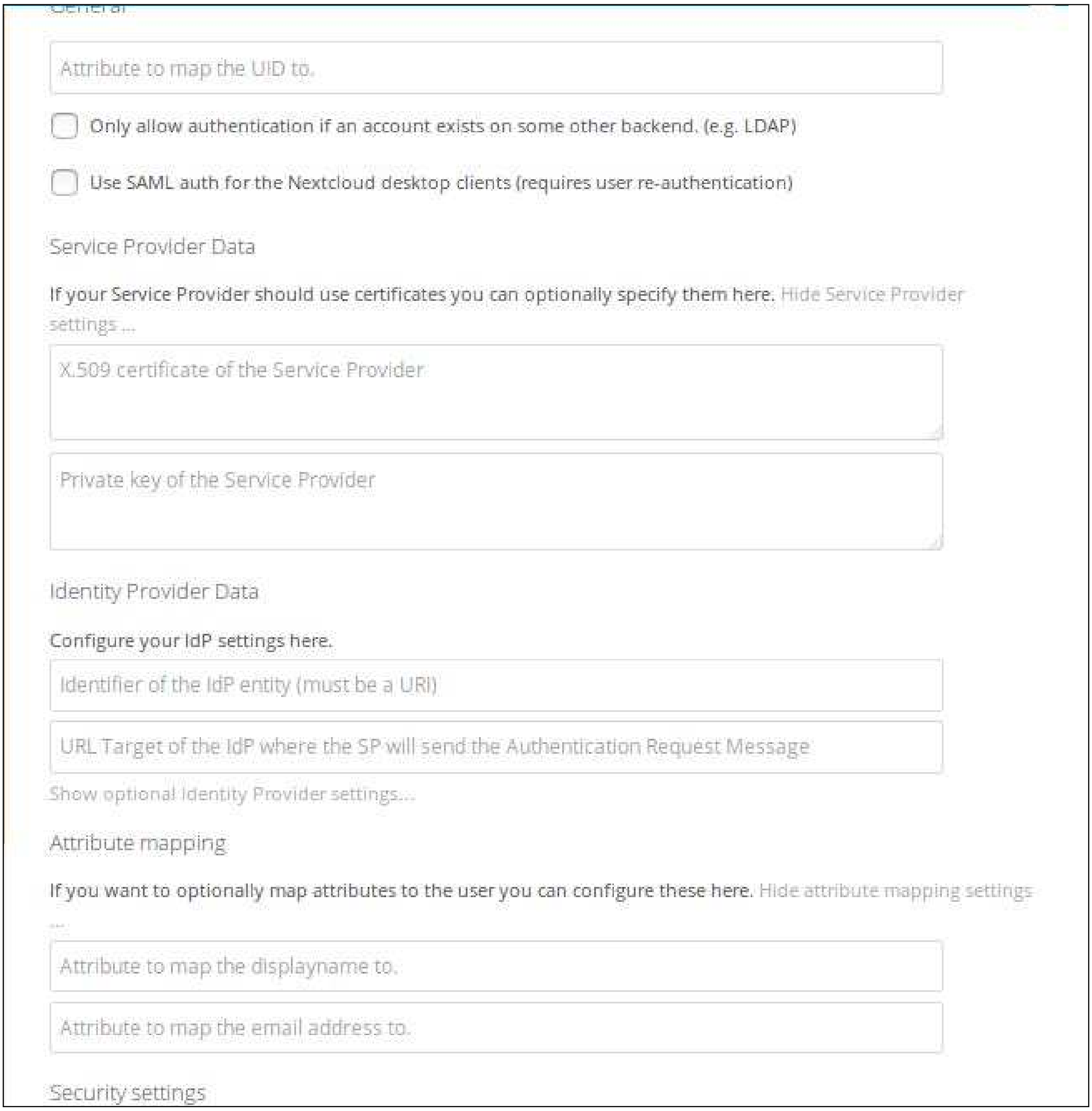
Figure 2. The Original Nextcloud/ownCloud Functions: File and Picture Storage, Dropbox-Style

A Word on Security

Several good reasons to choose Nextcloud as the online home for your own files and data are related to security. I don't cover them in detail in this introductory article, but I want to mention at least some of them.

Nextcloud refuses continuous (that is, malicious) attempts to authenticate from any computer, except those whose IP addresses are included in "brute-force IP whitelists". (Of course, the best possible whitelist you can configure is an empty one.)

Content Security Policy (CSP), instead, is the way a Nextcloud server may, for



General

Attribute to map the UID to.

□ Only allow authentication if an account exists on some other backend. (e.g. LDAP)

□ Use SAML auth for the Nextcloud desktop clients (requires user re-authentication)

Service Provider Data

If your Service Provider should use certificates you can optionally specify them here. Hide Service Provider settings ...

X.509 certificate of the Service Provider

Private key of the Service Provider

Identity Provider Data

Configure your IdP settings here.

Identifier of the IdP entity (must be a URI)

URL Target of the IdP where the SP will send the Authentication Request Message

Show optional Identity Provider settings...

Attribute mapping

If you want to optionally map attributes to the user you can configure these here. Hide attribute mapping settings ...

Attribute to map the displayname to.

Attribute to map the email address to.

Security settings

Figure 3. Configuring SAML for secure single-sign-on is a delicate process, but the Nextcloud interface makes it simple with plenty of instructions.

example, tell a browser "if you found this script in, or linked from, a page from me, do *not* trust it. It must have been injected there by some attacker!"

SAML (Security Assertion Markup Language) is an XML-based open standard for secure, single sign-on (SSO) to web-based applications across different, independent servers. Nextcloud 13 supports SSO with SAML natively through a dedicated app. If you log in to your own Nextcloud, you then can use any service, on any other SAML-enabled website for which you have access rights, without entering any more credentials.

Prerequisites

In order to install Nextcloud, you need basic Linux administration skills, familiarity with the command line and some patience. Software-wise, the Nextcloud server is a PHP application that needs a LAMP (Linux, Apache, MySQL, PHP) or similar software stack to work. You can install it on almost any box permanently connected to the internet, from bare metal in a server farm to ordinary web-hosting accounts, or even home-based minicomputers like the Raspberry Pi.

Nextcloud 13 can run in different environments, from shared hosting accounts to servers using nginx instead of Apache or as an Ubuntu snap package. The configuration officially recommended (quoting the website) "for the best compatibility, especially if you plan to use lots of plugins", is Apache 2.4 or later, and a MySQL or MariaDB database. This is why I'm describing command-line installation of Nextcloud 13 server on a computer running Ubuntu 16.04 LTS, PHP 7, Apache2 and a MariaDB 10.0 database.

The procedure is relatively lengthy to explain, but it's worth it. Nextcloud has many more features and options than what I describe here, and you can use it to store some of your most sensitive documents and data. Therefore, I strongly suggest that before actually exposing it on the internet, be sure to play with it locally on your home Linux box as much as you can, even if it means re-installing it from scratch several times.

And, there's only one way to do all that testing efficiently: an installation method that can be entirely automated with a shell script.

Installation and Initial Configuration First, get *all* the necessary software, because Nextcloud 13 depends on several packages. In the case of Ubuntu 16.04, the ones you must install with `apt-get` are these:

```
sudo apt-get install apache2 mariadb-server
 ↪libapache2-mod-php7.0
sudo apt-get install php7.0-gd php7.0-json php7.0-mysql
 ↪php7.0-curl php7.0-mbstring
sudo apt-get install php7.0-intl php7.0-mcrypt php-imagick
 ↪php7.0-xml php7.0-zip
```

(Don't worry if some of those packages are already installed on your system, `apt-get` will just skip to the next one.)

After that, download the Nextcloud tarball from the website, unpack it, and copy it into its own folder under the Web server document root, which, in this example, is /var/www/html/:

```
tar -xjf nextcloud-13.0.0.tar.bz2
sudo cp -r nextcloud /var/www/html/
```

Preparing the Database and Web Servers

On Ubuntu 16.04 (and, likely, on most Ubuntu derivatives), the command-line installation of Nextcloud won't work unless there already is a MariaDB account that is not root, but does have all the privileges needed to create new users and databases. Here's how to create such an account, if needed, with name dbadmin and password dbadminpw (note that mdb is my own MariaDB prompt, not the default one):

```
sudo mysql -u root
mdb>use mysql;
mdb>CREATE USER 'dbadmin'@'localhost' IDENTIFIED BY 'dbadminpw';
mdb>GRANT ALL PRIVILEGES ON *.* TO 'dbadmin'@'localhost'
 ↪WITH GRANT OPTION;
mdb>FLUSH PRIVILEGES;
mdb>exit;
```

Apache, on the other hand, needs a dedicated configuration file, which on Ubuntu 16.04

is /etc/apache2/sites-available/nextcloud.conf, to handle Nextcloud properly. If your server is example.com, and you want your Nextcloud available at example.com/nextcloud, that file should look like this:

```
##########################################################
Alias /nextcloud "/var/www/html/nextcloud/"

# the following two directives are needed for picoCMS

ProxyPass /nextcloud/sites/ http://localhost/nextcloud/
↪index.php/apps/cms_pico/pico/
ProxyPassReverse /nextcloud/sites/ http://localhost/nextcloud/
↪index.php/apps/cms_pico/pico/

<Directory /var/www/html/nextcloud/>
  Options +FollowSymlinks
  AllowOverride All

 <IfModule mod_dav.c>
  Dav off
 </IfModule>

 SetEnv HOME /var/www/html/nextcloud
 SetEnv HTTP_HOME /var/www/html/nextcloud

</Directory>
##########################################################
```

Once that file is ready, type the following commands at the prompt to enable the modules that Apache also needs to handle Nextcloud:

```
sudo a2enmod rewrite
sudo a2enmod headers
sudo a2enmod env
sudo a2enmod dir
sudo a2enmod mime
sudo a2enmod proxy_http
```

Finally, here are the commands to type to make the Apache user own the Nextcloud files, enable the configuration files shown above and, finally, restart Apache:

```
sudo chown -R www-data:www-data /var/www/html/nextcloud/
sudo ln -s /etc/apache2/sites-available/nextcloud.conf
 ↪/etc/apache2/sites-enabled/nextcloud.conf
sudo service apache2 restart
```

Actually Installing Nextcloud

Once the Web and database servers are ready and the Nextcloud files are in place, the actual Nextcloud installation may happen entirely by pointing your browser (in the "local testing" phase I already recommended, at least) at http://localhost/nextcloud. As promised, however, I'm going to show you how to continue on the command line.

This is possible thanks to a PHP tool called `occ` (from "ownCloud console") distributed with Nextcloud. To use `occ`, move to the nextcloud base directory, and then, using the Apache server account (www-data, in this example) to preserve the right permissions on files and folders, run it as follows:

```
cd /var/www/html/nextcloud/

sudo -u www-data php occ maintenance:install --database "mysql"
 ↪--database-name "mynextcloud"  --database-user "dbadmin"
 ↪--database-pass "dbadminpw" --admin-user "nextcloudadmin"
 ↪--admin-pass "nextcloudadminpw"
```

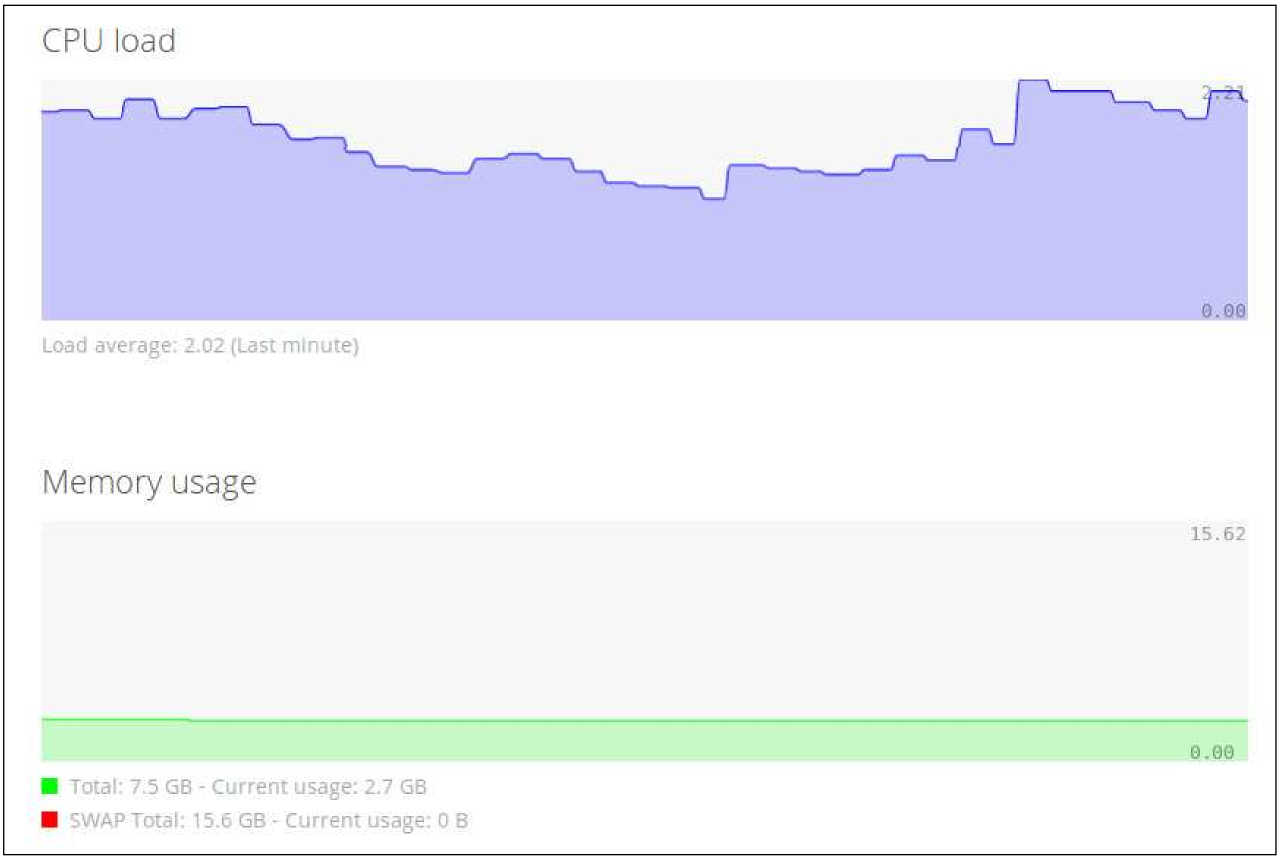
If everything goes well, `occ` will exit with a "Nextcloud was successfully installed" message. At that point, you'll finally be able to log in to Nextcloud at http://localhost/nextcloud with the admin account ("nextcloudadmin") and password "nextcloudadminpw".

Using `occ`, you also can create users or enable previously downloaded Nextcloud apps, among other things. The `occ` equivalent of the GUI procedure for creating a user named marco in the mycloudusers group, with display name "Marco F", is:

```
sudo -u www-data php occ user:add --display-name="Marco F"
 ↪--group="mycloudusers" marco
```

Measuring and Optimizing Performances

Nextcloud 13 has a tab, shown in Figure 4, that gives the administrator a first, quick idea of how loaded it is. In order to avoid performance bottlenecks, the easiest solution seems to be the memory cache called OPcache. To enable it, follow the instructions in the Nextcloud



Load average: 2.02 (Last minute)

🟩 Total: 7.5 GB - Current usage: 2.7 GB

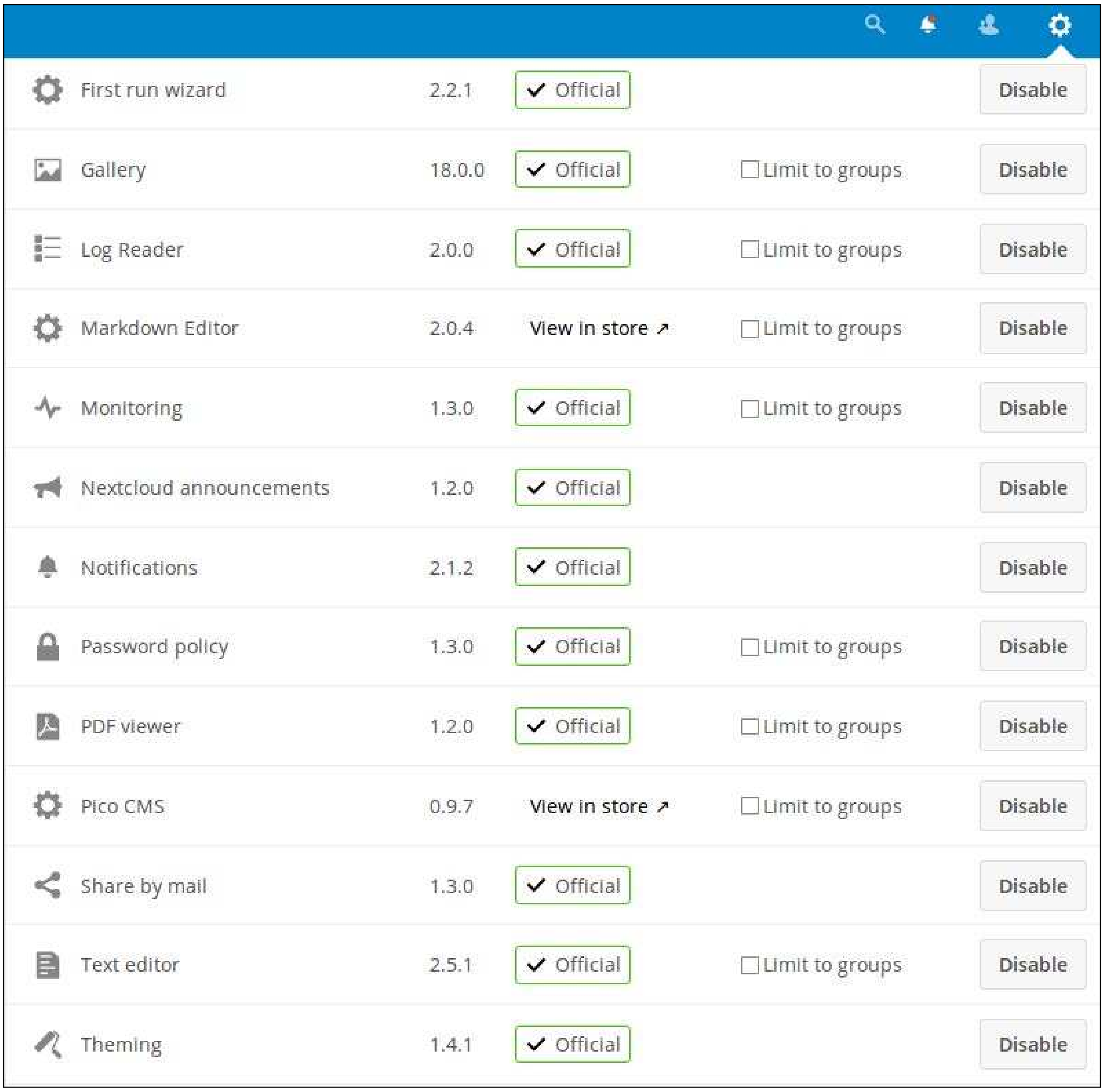
🟥 SWAP Total: 15.6 GB - Current usage: 0 B

Figure 4. The Nextcloud 13 Real-Time CPU and Memory Load Monitors

Administration/Basic Settings tab. You also can install the Redis database for local caching and file locking. (For details, see "Tuning Nextcloud for Optimal Performance".)

The Real Power of Nextcloud Is Its Apps

If Nextcloud were only a personal alternative to file-hosting services like Dropbox, it wouldn't be such a big deal. Its real power, however, is in the many extensions, or "apps",



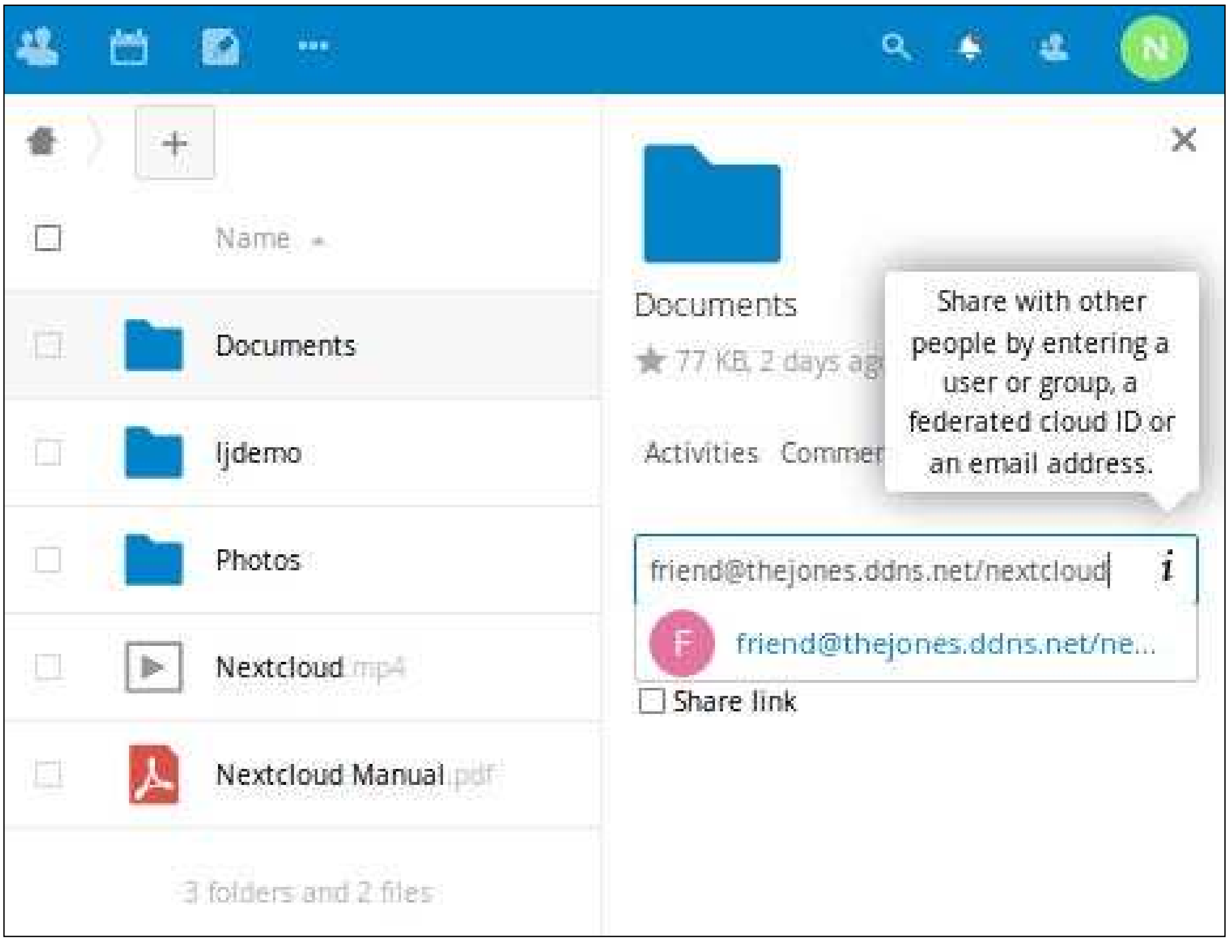
First run wizard	2.2.1	✓ Official		Disable
Gallery	18.0.0	✓ Official	□ Limit to groups	Disable
Log Reader	2.0.0	✓ Official	□ Limit to groups	Disable
Markdown Editor	2.0.4	View in store ↗	□ Limit to groups	Disable
Monitoring	1.3.0	✓ Official	□ Limit to groups	Disable
Nextcloud announcements	1.2.0	✓ Official		Disable
Notifications	2.1.2	✓ Official		Disable
Password policy	1.3.0	✓ Official	□ Limit to groups	Disable
PDF viewer	1.2.0	✓ Official	□ Limit to groups	Disable
Pico CMS	0.9.7	View in store ↗	□ Limit to groups	Disable
Share by mail	1.3.0	✓ Official		Disable
Text editor	2.5.1	✓ Official	□ Limit to groups	Disable
Theming	1.4.1	✓ Official		Disable

Figure 5. Work, entertainment, administration, sharing—Nextcloud apps can do a lot.

that provide many additional functions, often through extra buttons in Nextcloud's top bar. Figure 5 shows only a partial idea of how diverse the apps can be.

To use an app not shown in the administration interface, download and unpack it in the apps subfolder of your Nextcloud installation, then make the Apache user owner of its files. After that, you just need to enable the app, with `occ` or in the Nextcloud interface.

In the Nextcloud interface, you also can enable bundles of apps with one click or limit access to most apps to selected groups of users. The app bundles in Nextcloud 13 are Enterprise, Groupware, Social sharing and an "Education Edition".



N
+
☐ Name
Documents
ljdemo
Photos
Nextcloud mp4
Nextcloud Manual pdf
3 folders and 2 files
Documents
77 KB, 2 days ag
Activities Commer
Share with other people by entering a user or group, a federated cloud ID or an email address.
friend@thejones.ddns.net/nextcloud
F friend@thejones.ddns.net/ne...
☐ Share link

Figure 6. A detail of how you can share files and folders from your Nextcloud with any other user of other Nextcloud instances.