

# Nextcloud Setup Transcript

## Introduction

This video is the first in a series to setup a Nextcloud Server in your home or office using a dedicated computer with a Linux operating system.

This video series will show how a Nextcloud Server can be installed on a Raspberry Pi 4b+ series computer (using 4gb or 8gb of RAM) using Ubuntu 20.04 operating system (64-bit).

This series will cover Nextcloud at Home. This version is no charge to use.

Nextcloud Hub and Enterprise are commercial versions of the application designed for medium sized businesses (or larger) as well as educational institutions.

Information about Nextcloud is available on the website:

<https://nextcloud.com/>

Nextcloud applications work with EU (European Union) compliance's that support businesses, schools, and government agencies that can't use traditional cloud services from American companies (Microsoft, Google, and Amazon) since they are providing federal government contract services for the United States.

## Recommended Hardware

64-bit computer using Intel, AMD, or ARM processor (more than one computer can be used for SQL services).

**Because of the size of applications in operation (greater than 2gb of RAM) this application doesn't support 32 bit computers as cloud server technology has always been intended for 64-bit computer purposes.**

Minimum of 4gb of RAM (8gb of RAM is recommended for better performance if this is the only computer dedicated to this service)

Magnetic hard drive storage to store files for the service

**Solid state hard drives are not recommended for this application as the result of updating and adding files can slow down performance but can be used to boot up the computer. Using database server files on solid state hard drives can crash the drive and are not recommended for this use by the manufacturer.**

For this application, it is recommended that the cloud server files (including the database files) will be stored on a hard drive that is separate from the hard drive use for bootstrap purposes (drive used for booting the computer can be solid state or magnetic).

This drive can be an external USB 3.0 hard drive, or another internal hard drive if the computer used is a 64-bit x86 series computer (such as an i5, i7 or higher).

1 gigabit Ethernet network interface card

**Wi Fi services are not recommended for bandwidth and security reasons.**

Functioning Ethernet network including router and modem (cable or dsl) with bandwidth that can support high volume file transfers (500 MB or greater).

Router must be capable of allowing access to the admin console in order to forward port services (80, 443, and 22) for internet access and administrative services to your mobile and/or remote devices. If you plan on using this service only in a local area network without remote (known as an intranet service), port forwarding isn't necessary.

## **Recommended Software**

### **Ubuntu Server 20.04.0 LTS (64-bit)**

For this application, the desktop is not installed to provide the necessary computer resources to operate the cloud server so that the cloud server can serve as the desktop for users. Eliminating the installation of the desktop can help with security.

In this video, Ubuntu Server 20.04 LTS (64-bit) for ARM is used. This installation processed is very streamlined than what is used on traditional computers such as x86.

If you are installing Nextcloud on a dedicated x86 computer, visit the website:

<https://ubuntu.com/download/server>

Select option 2 (Manual Server Installation)

### **Using this application on a dedicated x86 computer**

The computer should have have completely emptied hard drives (or hard drives that can be formatted for Linux purposes).

## Using this application on a virtual computer

This type of installation isn't covered in this training material at this time.

Ubuntu does provide a special installation for this application at this website:

<https://ubuntu.com/appliance/nextcloud/vm>

Using Nextcloud on a virtual machine is supported for Ubuntu, Windows, and Mac OS

For Windows installation, if your virtual machine is setup, make sure the network connection is set for private in order to install the Multipass program.

This installation may covered in a future video for Windows 10/11 and Windows Server installations.

Virtual box may be required to use Nextcloud on Windows virtual machines applications.

**Do not install Nextcloud on a Windows Subsystem configured with Ubuntu. This service doesn't provide the same features that a traditional virtual machine uses since the subsystem can shut down once you stop using it.**

### MySQL Server 8 (64-bit)

The current version of Nextcloud has been modified to work with MySQL Server 8, in conjunction with PHP 8.0 to increase security.

MySQL Server is supported by Oracle. While this database server has some similarities to traditional Oracle SQL Server platforms, a traditional Oracle SQL Server working with Nextcloud is only supported on an Enterprise version (available by contacting Nextcloud). This training series only covers the Community version of Nextcloud.

Nextcloud supports SQLite and MariaDB but **SQLite is only intended for testing purposes only.** MariaDB (a derivative of MySQL) will work with Nextcloud but there are some applications developed for Nextcloud that may not be compatible with it.

MySQL Server can be installed on Linux, Windows, and Mac OS computers. Linux computers installed with Raspian (the standard Raspberry Pi operating system) doesn't support MySQL Server (or the Client application). MariaDB can be used with Raspian.

If you install MySQL on separate Raspberry Pi, Ubuntu must be installed in order to operate (either desktop or server).

MySQL Server is the best third party database server system to run on Windows computers and Servers without any additional configuration steps (unlike Oracle SQL Server) and integrates well with ODBC, IIS, and Microsoft Visual Studio (Professional Version of higher).

MySQL is also supported on Microsoft Azure for replication and backup purposes. It is compatible with Microsoft Office applications including Access and Excel. It works with data pivot table solutions within Excel (once connected to ODBC drivers).

This version of MySQL Server uses encrypted connections to the database server (that work with the additional encryption used to run the website) for extra security. While previous versions of MySQL (version 5.7) may appear in the documentation, it is being phased out to facilitate the log in system used to access Nextcloud.

While this series will cover installing MySQL Server 8.0 on the same computer as Nextcloud, it is recommended to use a separate computer to run MySQL Server (especially if you are using MySQL Server for other applications). This series is assuming you are only using MySQL for Nextcloud only.

If your Nextcloud Server is 4gb of RAM, it is suggested to dedicate 1gb for operation of MySQL Server. If you are using a 4gb server for Nextcloud it is recommended to install MySQL on a separate server.

MySQL Server 8.0 is only supported on 64-bit computers to facilitate memory applications allocations greater than 2gb.

If MySQL Server isn't installed on the same server as Nextcloud, it is recommended to install MySQL client by typing in the follow on a Linux prompt:

```
$sudo apt-get install mysql-client
```

## **Installation of MySQL Server for Windows and Mac OS**

To install MySQL for Mac OS and Windows, download the MySQL installer at the website:

<https://dev.mysql.com/downloads/installer/>

**MySQL Community Version is the only version covered in this series. If you install the Enterprise Version in error, it will deactivate (after a certain amount of time) unless you contact Oracle to purchase it.**

MySQL Community Version is no charge to use (unlike the Enterprise Version).

## PHP 8.0

PHP (Pre Hypertext Processor) is a scripting language the many websites (including Nextcloud) are used in website development that is supported in multiple platforms including Linux, Windows, and Mac OS.

While the web server used for this curriculum uses aspx (supported by Windows computers and servers only) PHP is installed to support some third party applications used on this server.

This version of PHP works in conjunction with MySQL Server 8.0 to facilitate the security features used for transaction database processing.

You can install additional versions of PHP, if your system runs on applications that don't support version 8.0 but 8.0 must be the default version that is activated in order for Nextcloud to operate.

**Do not install any version of PHP greater than 8.0. If version 8.1 (or higher is installed) Nextcloud will report an error message on the web browser and won't continue until it is corrected to version 8.0.**

Details about PHP are available on the website:

<https://www.php.net/>

## Apache 2.0

Apache is the application that allows the computer to function as a web server.

This application can be installed on Linux, Windows, and Mac OS computers.

If Apache is installed on a Windows computer or Server that has IIS (Internet Information Server), each application should have separate working folders for website files for security and compatibility reasons. If you need to install Apache server on a Windows computer running IIS, it is recommended to create a virtual machine with Ubuntu and Apache 2 installed. This configuration should be dedicated for 4gb of memory (minimum) for operation.

Apache 2 provides the features to connect the website domain name, security certificates, IP address, and application folders to use the web services that will be covered in the second video.

Details about Apache2 are available on the website:

<https://httpd.apache.org/>

## **SSH (Secured Shell)**

SSH is used to facilitate administrative tasks used on the server including it's setup of the Nextcloud service.

This server doesn't require a computer to be installed or attached to the server (it does require a keyboard) making it possible to communicate with server using a command prompt screen.

SSH is the replacement to TTY (used in Linux and Xenix systems for remote computer connections) providing it only encrypted connection for secure communication. SSH server connections can also support SFTP (secured file transfer protocol) for secure file management purposes (replacing FTP).

SSH servers can be used on Linux, Windows, and Mac OS computers to to do remote management functions on any server or computer connected to the service.

In recent years, Windows has supported this platform to do simple management features (rather than using Windows Remote Desktop) since it uses very minimal hardware resources. SSH can be used in Windows 10 and 11 computers using Windows Subsystem (installed with Ubuntu). SSH can be executed from the command prompt window.

For detail about SSH, visit the website:

<https://www.ssh.com/academy/ssh>

## **Using services for keeping track of time**

Raspberry Pi doesn't provide a built in way to keep track of the date and time (it can be installed through the GPIO as an option). It is dependent on the time provided be the network equipment or another application (running on the computer or another server) to synchronize time.

In order to transfer files properly between devices requires synchronization of time in order to work properly.

## **NTP (Network Time Protocol)**

NTP is a public domain project that provides packet-switch time services between computers. NTP can synchronize the time with servers and computers that are connected to a local area network making sure that timekeeping is synchronized by a variance of a few milliseconds.

Information about NTP is available on the website:

<http://www.ntp.org/>

## Changing the data folder location in MySQL

Changing the default folder can be done on Windows and Mac OS computer during the installation process (when using MySQL Installer).

It is recommended to keep SQL server data on a separate hard drive (on the computer or server used) from the hard drive that is being used to boot the computer. This is in case the database server files crash (for any possible reason) they do not impact booting up the computer to fix and/or repair the files.

Linux installations of MySQL Server do not provide the option to change the storage location of the files and use a default folder (depending on what version of Linux you are using). For Ubuntu, this location is:

```
/var/lib/mysql
```

If the files need to be relocated (regardless of which computer is used) the following steps should be done

The database folder file should be created first.

At any command prompt, type in the following:

```
$mysqldump -u root -p[password] --all-databases > [backup destination]/all-databases.sql
```

You may have to create a folder for backup purposes

MySQL server should be shutdown  
(shutting down MySQL is different depending on operating system)

Copy MySQL data folder as a backup  
(this folder is in different locations based on operating system)

Copying the data to the new folder

Edit the MySQL configuration file and change the database directory location.

Restarting MySQL Server

Per Oracle, MySQL data files should never be stored on a solid state hard drives (unless it is used strictly for backup purposes only). Using MySQL on a solid state hard drive can crash the drive (making the data difficult to recover) as well as render the solid state hard drive useless. Using solid state hard drives does not help with the performance of database functions since these devices perform slower when updating and changing records than traditional hard drives.

## Legal Information

This application isn't intended for any public file sharing services. To ensure that your server doesn't become compromised (including the data) any user using this application should use the system with a user id and password.

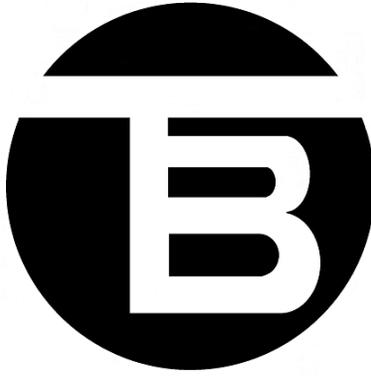
Two factor authentication systems can be used using the Google or Microsoft Authenticator app from your mobile device (to be covered in the third video).

While media files (videos and music) can be stored and played back on the application, it is assumed that you are only storing media files that you created (on your own) and have complete ownership of. Playback and storage of copyrighted materials may not be legal for this application (based on the playback license that you paid for when you purchased a license to download and play the media for your own personal use). Allowing access to copyrighted materials for public access (this includes playback and download) isn't recommended and could result in security breaches as well as legal action taken.

Any material used for this project can be used for your personal use only and are not allowed to be distributed and shared in anyway on any website, server, or any other electronic storage purpose that allows the public to access without the permission of the web master.

This material provided in this series isn't approved by Nextcloud but is provided as a service to encourage backing files securely between your mobile devices and your own personal cloud server, as Nextcloud promotes the product to do.

This material presented is intended for home and small business use. If this product is to be used for larger scale settings, it is recommended to contact Nextcloud about using their products, that will serve these needs better, as a paid service and/or product.



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