Printing on Raspbian

Date Created: May 2020

Reviewed

Description: v1

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Prerequisites

Raspberry Pi

You'll need a Raspberry Pi to follow this tutorial, but the procedure is almost the same on any Debian-like distribution
Try to prepare it with the following steps:

- **Install Raspbian on your Raspberry Pi**
Choose the version you prefer, you can follow this tutorial with both versions
The full version allows you to access CUPS in local, so it may be faster

- Update your system

sudo apt update
sudo apt upgrade
- Enable SSH if you want to follow this tutorial from your computer

sudo service ssh start
That should be enough for the Raspberry Pi preparation

Printer information

We'll install your printer on your Raspberry Pi, so collect all the needed information and prepare it for the installation

- For an USB Printer:

    - Turn the printer ON
    - Plug it into your Raspberry Pi
- For a Network Printer:

    - Turn the printer ON
    - Make sure the printer is available on the network
    - You can check this on your computer
- Noe down the brand and the exact model to install the driver later

CUPS installation

What is CUPS?

CUPS stands for Common Unix Printing Standard
Developed by Apple for macOS, it brings support for printers in the Linux world

CUPS use IPP (Internet Printing Protocol) to manage local and network printers
It's the main way, maybe the only one, to install a printer on Linux systems

So we want to install it on the Raspberry Pi to help us to configure our printer

CUPS Installation

The installation process is straightforward as the package is available in the Raspbian repository

sudo apt install cups

Type Y when asked to continue the install process
There are a lot of dependencies, so it can take a few minutes on the Raspberry Pi

At this step, with the Raspbian Desktop version, you should already have access to the CUPS web interface at http://localhost:631
But for a remote access we need to edit the configuration file

CUPS Configuration

The main configuration file is available at /etc/cups/cupsd.conf
Follow these steps to adjust the configuration:

- •Open the configuration file

sudo nano /etc/cups/cupsd.conf
- •Find this line

Listen localhost:631
- •Replace by this one

Port 631
This asks CUPS to listen on the port 631 no matter which IP address
But it's not enough as there are other securities

- •We need to allow access from any computer on the network
To do this, find these groups and add the Allow @local directive inside:

```
<Location />
Order allow,deny
Allow @local
</Location>
# Restrict access to the admin pages...
<Location /admin>
Order allow,deny
Allow @local
</Location>
# Restrict access to configuration files...
<Location /admin/conf>
AuthType Default
Require user @SYSTEM
Order allow,deny
Allow @local
</Location>
```
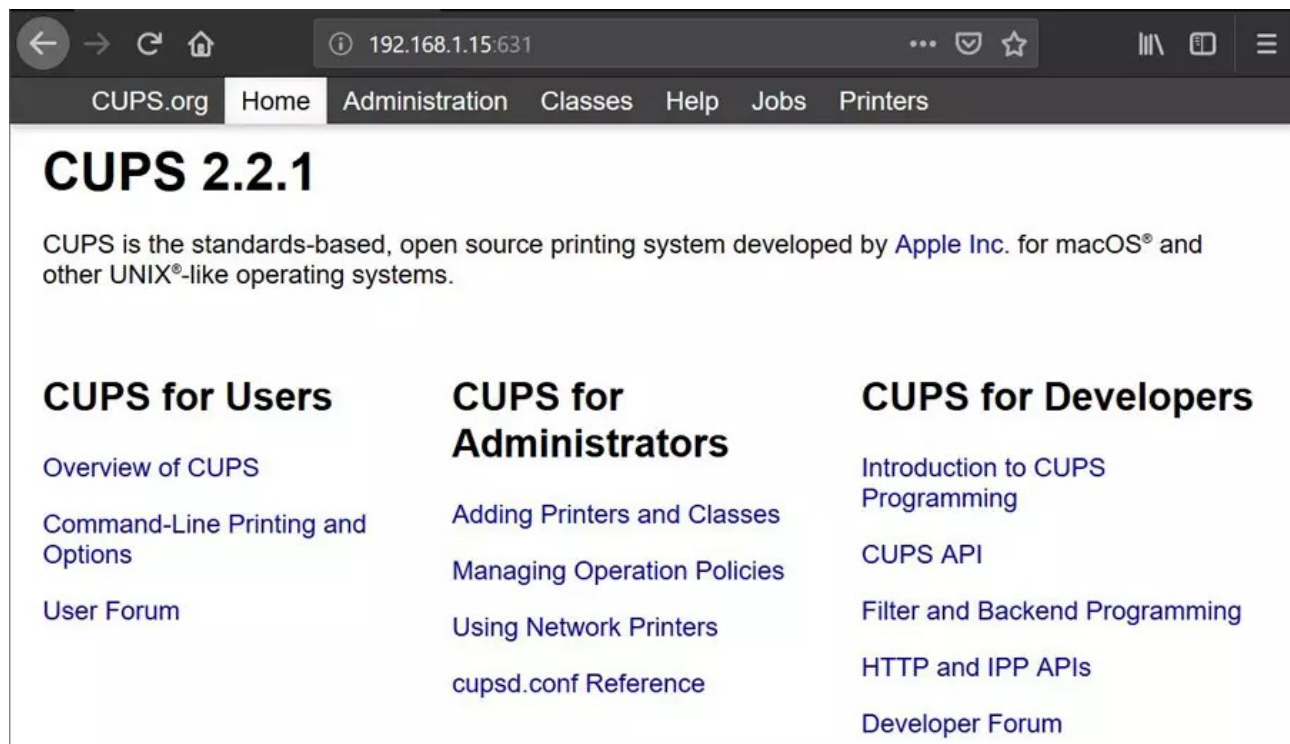- •Save and exit (CTRL+O, CTRL+X)

- •The last step is to restart the CUPS service to apply changes:

sudo service cups restart

You can now access the web interface from any computer on the network:
http://<IP>:631

If you have a firewall on your Raspberry Pi (iptables or ufw for example), you need to allow access on the port 631

Add your printer

Allow pi user to add a printer

To install a printer, we need an administrative right on CUPS
To do this, we need to login with a user in the lpadmin group

So, we'll add the pi user in this group, like this:

sudo usermod -a -G lpadmin pi

That's all we need, pi is now in the lpadmin group

Use HTTPS

To add a printer, CUPS may ask you to use HTTPS instead of HTTP (as there is an authentication step)
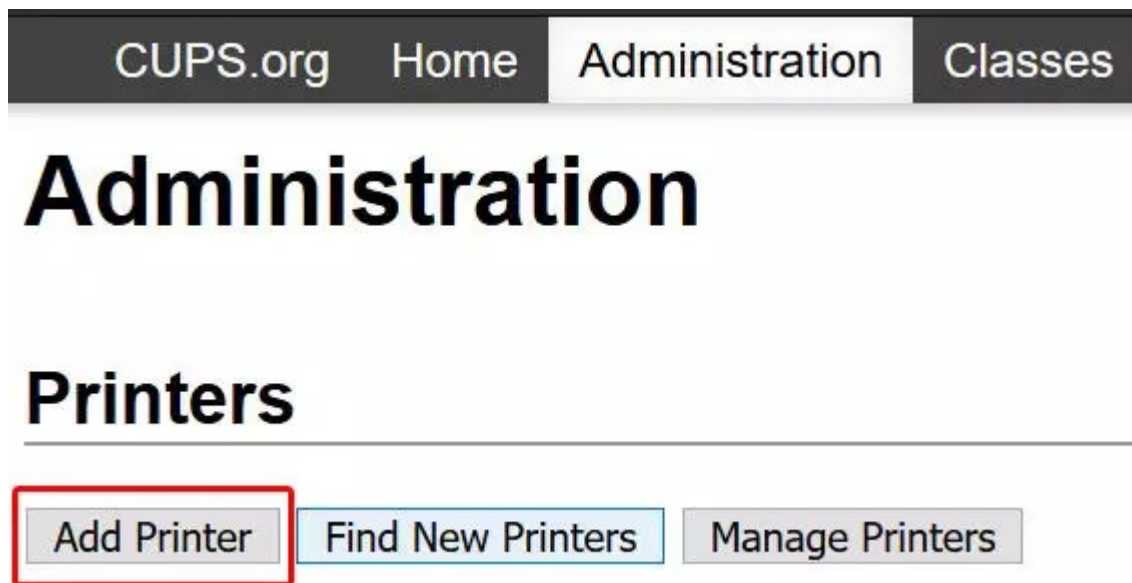So switch right now on the HTTPS URL: https://<IP>:631

You'll get a security warning from your browser
We don't have a certificate, so accept this warning and continue to the CUPS web interface

Add the printer

We can now add the printer using the CUPS interface

   • Open the CUPS web interface: https://<IP>:631

   • In the top bar menu, click on the "Administration" menu

   • Then click on Add printer

   • CUPS will ask you for a login and password
   Use the pi credentials: pi /raspberry by default

• Once logged, you see a list of printers like this

Add Printer

Add Printer

Local Printers: ○ VNC Remote Printer (VNC Printer)
Discovered Network Printers: ○ EPSON XP-530 Series (EPSON EPSON XP-530 Series)
○ EPSON XP-530 Series (EPSON XP-530 Series)
Other Network Printers: ○ Backend Error Handler
○ Internet Printing Protocol (ipps)
○ Internet Printing Protocol (ipp14)
○ Internet Printing Protocol (https)
○ AppSocket/HP JetDirect
○ Internet Printing Protocol (ipp)
○ Internet Printing Protocol (http)
○ LPD/LPR Host or Printer
[Continue]

CUPS should have already found your printer on the network, or if plugged
Select the printer you want to install and click "Continue"
• In the next step, CUPS asks you to set the printer properties, like name and description:

Add Printer

Name: EPSON_EPSON_XP-530_Series
(May contain any printable characters except "/", "#", and space)
Description: EPSON EPSON XP-530 Series
(Human-readable description such as "HP LaserJet with Duplexer")
Location:
(Human-readable location such as "Lab 1")
Connection: dnssd://EPSON%20XP-530%20Series._ipp._tcp.local/?u
Sharing: ☐ Share This Printer
[Continue]

Don't forget to check the "Sharing" box to share this printer on the network for others computers

•Then you need to select the corresponding driver for your printer

If the specific driver is not available, take a close one, or upload a PPD file from the manufacturer if you have one
Finally, click on "Add Printer"

•In the last steps, it asks you to configure the printers settings
You may have several tabs to fill

Leave this all by default and come back later if you need to make some changes
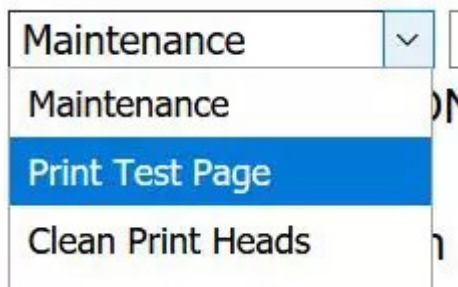Click on "Set Default Options" and that's it, the printer is installed in CUPS

Test page

From CUPS

Directly in CUPS, in the printer page (you should be there), you can print a test page and see if everything works well
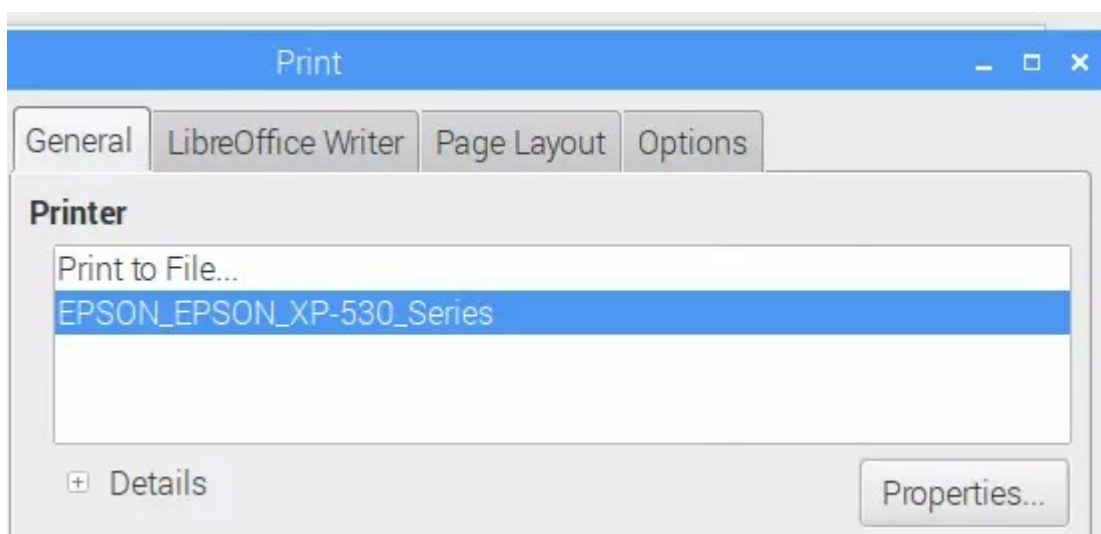
In the "Maintenance" drop down, choose "Print Test Page"

You printer will print the CUPS test page, so you can check that everything seems OK

From another app

Now that you installed the printer in the CUPS interface, you can use it from any application on your Raspberry Pi

For example, in the LibreOffice Writer application, I now have my printer in the Print menu:

So I can choose it, and print a test page from here too

Print from another computer

CUPS is not only a way to install printers easily but also a print server to share printers on the network
If you check the box "Share this printer" during the installation, you can print from another computer, using CUPS

To do this, you need to install samba
Follow these steps:

•Install the samba package

sudo apt install samba
Samba is a service to share files on Linux, and it's also useful to share printers

•Access the default share on your Raspberry Pi
For Windows users, type this address in your file explorer:
\\<IP>\

•You should see your printer in this folder

> 192.168.1.15

EPSON_EPSON_XP-530_Serie
s

•

•Double click on it to install it on your computer

While there is no point on doing that on a windows computer for a network printer, it can be useful to turn your old USB printer into a network printer
Once configured in CUPS, you can use it from any device on the network, even if it's not a network printer

It can also be faster with several Linux/Mac on the same network
Install CUPS and the printer on the first, and just link the shared printer to the others

Conclusion

You now know how to install any printer on your Raspberry Pi

There are some funny projects where you'll need a printer so this guide might be handy
I remember a cool photo booth for example. You take a photo and the Raspberry Pi prints it automatically