

2. Upgrade to bullseye.

Warning : This could potentially crash your OS. Proceed with **cautious**.

Before we begin, take a look at our current system.

```
uname -a
cat /etc/os-release
cat /etc/apt/sources.list
cat /etc/apt/sources.list.d/raspi.list
```

```
seeed@raspberrypi:~ $ uname -a
Linux raspberrypi 5.10.63-v7l+ #1459 SMP Wed Oct 6 16:41:57 BST 2021 armv7l GNU/Linux
seeed@raspberrypi:~ $ cat /etc/os-release
PRETTY_NAME="Raspbian GNU/Linux 10 (buster)"
NAME="Raspbian GNU/Linux"
VERSION_ID="10"
VERSION="10 (buster)"
VERSION_CODENAME=buster
ID=raspbian
ID_LIKE=debian
HOME_URL="http://www.raspbian.org/"
SUPPORT_URL="http://www.raspbian.org/RaspbianForums"
BUG_REPORT_URL="http://www.raspbian.org/RaspbianBugs"
seeed@raspberrypi:~ $ cat /etc/apt/sources.list
deb http://raspbian.raspberrypi.org/raspbian/ buster main contrib non-free rpi
# deb http://archive.raspberrypi.org/debian/ buster main

# Uncomment line below then 'apt-get update' to enable 'apt-get source'
#deb-src http://raspbian.raspberrypi.org/raspbian/ buster main contrib non-free rpi
seeed@raspberrypi:~ $ cat /etc/apt/sources.list.d/raspi.list
deb http://archive.raspberrypi.org/debian/ buster main
seeed@raspberrypi:~ $
```

- Backup your data (if necessary) and run upgrade commands

```
sudo apt-mark showhold
sudo apt update
```

```
seeed@raspberrypi:~ $ sudo apt-mark showhold
seeed@raspberrypi:~ $ sudo apt update
Ign:1 https://download.docker.com/linux/raspbian buster InRelease
Hit:2 http://archive.raspberrypi.org/debian buster InRelease
Get:3 http://raspbian.raspberrypi.org/raspbian buster InRelease [15.0 kB]
Hit:4 https://deb.nodesource.com/node_20.x nodistro InRelease
Hit:5 https://download.docker.com/linux/raspbian buster Release
Fetched 15.0 kB in 2s (8,753 B/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
324 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

- Upgrade the existing packages.

```
sudo apt upgrade
```

```
seed@raspberrypi:~ $ sudo apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following package was automatically installed and is no longer required:
  libdav1d3
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  libva-wayland2
The following packages will be upgraded:
  aspell avahi-daemon base-files bind9-host bluez bsutils bzip2 cifs-utils cpio cups cups-browsed cups-client
cups-common cups-core-drivers cups-daemon cups-filters cups-filters-core-drivers cups-ipp-utils cups-ppdc
cups-server-common dbus dbus-user-session dbus-x11 debconf debconf-i18n debconf-utils distro-info-data dpkg
dpkg-dev fdisk ffmpeg firmware-atheros firmware-brcm80211 firmware-libertas firmware-misc-nonfree
```

- Remove unnecessary packages.

```
sudo apt full-upgrade
sudo apt autoremove
```

```
seed@raspberrypi:~ $ sudo apt full-upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following package was automatically installed and is no longer required:
  libdav1d3
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
seed@raspberrypi:~ $ sudo apt autoremove
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages will be REMOVED:
  libdav1d3
0 upgraded, 0 newly installed, 1 to remove and 0 not upgraded.
After this operation, 610 kB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 162133 files and directories currently installed.)
Removing libdav1d3:armhf (0.5.1-1~bpo10~1) ...
Processing triggers for libc-bin (2.28-10+rpt2+rpil+deb10u2) ...
seed@raspberrypi:~ $ |
```

- Change source list.

```
sudo sed -i 's/buster/bullseye/g' /etc/apt/sources.list
sudo sed -i 's/buster/bullseye/g' /etc/apt/sources.list.d/*.list
sudo sed -i 's/#/debian-security bullseye/updates# bullseye-security#g'
/etc/apt/sources.list
```

```

seeed@raspberrypi:~$ sudo sed -i 's/buster/bullseye/g' /etc/apt/sources.list
seeed@raspberrypi:~$ sudo sed -i 's/buster/bullseye/g' /etc/apt/sources.list.d/*.list
seeed@raspberrypi:~$ sudo sed -i 's/#/debian-security bullseye/updates# bullseye-security#g' /etc/apt/sources.list
seeed@raspberrypi:~$ cat /etc/apt/sources.list
deb http://raspbian.raspberrypi.org/raspbian/ bullseye main contrib non-free rpi
# deb http://archive.raspberrypi.org/debian/ bullseye main

# Uncomment line below then 'apt-get update' to enable 'apt-get source'
#deb-src http://raspbian.raspberrypi.org/raspbian/ bullseye main contrib non-free rpi
seeed@raspberrypi:~$ cat /etc/apt/sources.list.d/raspi.list
deb http://archive.raspberrypi.org/debian/ bullseye main

```

- Set the terminal to English only, remove the apt cache.

```

export LC_ALL=C
sudo rm -rf /var/lib/apt/lists/*
sudo apt clean

```

```

seeed@raspberrypi:~$ export LC_ALL=C
seeed@raspberrypi:~$ sudo rm -rf /var/lib/apt/lists/*
seeed@raspberrypi:~$ sudo apt clean

```

- Update the package source and upgrade packages to **bullseye**

```

sudo apt update

```

```

seeed@raspberrypi:~$ sudo apt update
Get:1 http://archive.raspberrypi.org/debian bullseye InRelease [39.0 kB]
Get:2 http://raspbian.raspberrypi.org/raspbian bullseye InRelease [15.0 kB]
Get:3 https://download.docker.com/linux/raspbian bullseye InRelease [26.6 kB]
Get:4 https://download.docker.com/linux/raspbian bullseye/stable armhf Packages [42.9 kB]
Get:5 https://deb.nodesource.com/node_20.x nodistro InRelease [12.1 kB]
Get:6 http://archive.raspberrypi.org/debian bullseye/main armhf Packages [326 kB]
Get:7 https://deb.nodesource.com/node_20.x nodistro/main armhf Packages [9132 B]
Get:8 http://raspbian.raspberrypi.org/raspbian bullseye/main armhf Packages [13.2 MB]
Get:9 http://raspbian.raspberrypi.org/raspbian bullseye/contrib armhf Packages [60.2 kB]
Get:10 http://raspbian.raspberrypi.org/raspbian bullseye/non-free armhf Packages [106 kB]
Get:11 http://raspbian.raspberrypi.org/raspbian bullseye/rpi armhf Packages [1360 B]
Fetched 13.9 MB in 3min 11s (72.5 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
1106 packages can be upgraded. Run 'apt list --upgradable' to see them.

```

If there are any errors or warning messages related to a third-party repository, try fixing the issue or disabling the repository.

Start the system upgrade by upgrading the installed packages. This will upgrade only those packages that don't require any other packages to be installed or removed:

- Upgrade packages to **bullseye**

```

sudo apt upgrade

```

You will be asked whether you want the services to be automatically restarted during the upgrade.

Package configuration

Configuring libpam0g:armhf

There are services installed on your system which need to be restarted when certain libraries, such as libpam, libc, and libssl, are upgraded. Since these restarts may cause interruptions of service for the system, you will normally be prompted on each upgrade for the list of services you wish to restart. You can choose this option to avoid being prompted; instead, all necessary restarts will be done for you automatically so you can avoid being asked questions on each library upgrade.

Restart services during package upgrades without asking?

<Yes>

<No>

During the upgrade process, you may also be asked various other questions, like whether you want to keep an existing configuration file or to install the package maintainer's version. Read the information carefully, and if you didn't make any custom changes to the file, it is safe to type **Y**; otherwise, to keep the current configuration, enter **N**.

Configuration file '/etc/default/useradd'

==> Modified (by you or by a script) since installation.

==> Package distributor has shipped an updated version.

What would you like to do about it? Your options are:

Y or I : install the package maintainer's version

N or O : keep your currently-installed version

D : show the differences between the versions

Z : start a shell to examine the situation

The default action is to keep your current version.

*** useradd (Y/I/N/O/D/Z) [default=N] ?

This could potentially take very long time...

```
Processing triggers for libc-bin (2.28-10+rpt2+rpil+deb10u2) ...
Processing triggers for systemd (241-7~deb10u9+rpil) ...
Processing triggers for udev (241-7~deb10u9+rpil) ...
Processing triggers for libvlc-bin:armhf (3.0.20-0+deb10u1) ...
Processing triggers for install-info (6.7.0.dfsg.2-6) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for libglib2.0-0:armhf (2.58.3-2+deb10u6) ...
Setting up agnostics (0.13) ...
Setting up lxde (11) ...
Setting up libgoa-1.0-0b:armhf (3.38.0-3) ...
Setting up libgdata22:armhf (0.17.13-3+rpil) ...
Processing triggers for sgml-base (1.30) ...
Setting up python3-docutils (0.16+dfsg-4) ...
Processing triggers for dictionaries-common (1.28.4) ...
Processing triggers for dbus (1.12.28-0+deb11u1) ...
Processing triggers for ca-certificates (20210119) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
Processing triggers for initramfs-tools (0.140) ...
Processing triggers for libc-bin (2.28-10+rpt2+rpil+deb10u2) ...
```

- Clean up unnecessary packages

```
sudo apt autoremove
```

```
seed@raspberrypi:~ $ sudo apt autoremove
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages will be REMOVED:
  bsdmainutils geoip-database libbind9-161 libdns1104 libdns1110 libevent-2.1-6 libfl2 libfreetype6-dev libgeoip1
  libgssdp-1.0-3 libgupnp-1.0-4 libgutenprint-common libgutenprint9 libisc1100 libisc1105 libisccc161 libisccfg163
  libjim0.77 liblouis17 liblouisutdml8 liblwres161 liboauth0 libpng-dev libpng-tools libunique-1.0-0 libusb-0.1-4
  libusbmuxd4 libxcb-util0 printer-driver-gutenprint python-rtimulib python-sense-hat python3-asn1crypto
  python3-cookies python3-entrypoints python3-jepney python3-keyring python3-keyrings.alt python3-secretstorage
  python3-xdg raspinfo vlc-l10n vlc-plugin-samba zlib1g-dev
0 upgraded, 0 newly installed, 43 to remove and 373 not upgraded.
After this operation, 79.1 MB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 180578 files and directories currently installed.)
Removing bsdmainutils (12.1.7+nmu3) ...
Removing geoip-database (20191224-3) ...
Removing libbind9-161:armhf (1:9.11.19+dfsg-2.1) ...
Removing libdns1104:armhf (1:9.11.5.P4+dfsg-5.1+deb10u11) ...
```

- Reboot your device.

After booting, let's check the information of the device:

```
cat /etc/os-release
```

```
PS C:\Users\seed> ssh seed@raspberrypi.local
seed@raspberrypi.local's password:
Linux raspberrypi 5.10.103-v7l+ #1529 SMP Tue Mar 8 12:24:00 GMT 2022 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Sep 11 15:39:01 2024 from fe80::3c2:6c7b:b830:fd61%eth0

cWi-Fi is currently blocked by rfkill.
Use raspi-config to set the country before use.

seed@raspberrypi:~ $ cat /etc/os-release
PRETTY_NAME="Raspbian GNU/Linux 11 (bullseye)"
NAME="Raspbian GNU/Linux"
VERSION_ID="11"
VERSION="11 (bullseye)"
VERSION_CODENAME=bullseye
ID=raspbian
ID_LIKE=debian
HOME_URL="http://www.raspbian.org/"
SUPPORT_URL="http://www.raspbian.org/RaspbianForums"
BUG_REPORT_URL="http://www.raspbian.org/RaspbianBugs"
seed@raspberrypi:~ $ |
```

So we moved from **buster** to **bullseye**. System upgrade is succesful.

Install Node-RED

- Remove the existing node (if applicable).

```
sudo apt remove nodejs
```

- Try install a package with the new system (bullseye)

This step is to make sure that apt works normally. It should try to install your package while fix some conflicts. Let's use **vim** as an example:

```
sudo apt install vim
```

- Use the script to install Node-RED

```
bash <(curl -sL https://raw.githubusercontent.com/node-red/linux-
installers/master/deb/update-nodejs-and-nodered)
```

This can take 20-30 minutes on the slower Pi versions - please wait.

```

Stop Node-RED                                     \u2714
Remove old version of Node-RED                   \u2714
Node option not specified                         :  --node18 or --node20
Leave existing Node.js                            :  v20.17.0   Npm 10.8.2
Clean npm cache                                  -
Install Node-RED core                           \u2714    4.0.2
Move global nodes to local                      -
Leave existing nodes                             -
Install extra Pi nodes                          \u2714
Add shortcut commands                           \u2714
Update systemd script                           \u2714

```

Any errors will be logged to /var/log/nodered-install.log

All done.

You can now start Node-RED with the command `node-red-start`

or using the icon under Menu / Programming / Node-RED

Then point your browser to `localhost:1880` or `http://{your_pi_ip-address}:1880`

Started : Wednesday, September 11, 2024 PM05:05:01 CST

Finished: Wednesday, September 11, 2024 PM05:11:28 CST

WARNING

DO NOT EXPOSE NODE-RED TO THE OPEN INTERNET WITHOUT SECURING IT FIRST

Even if your Node-RED doesn't have anything valuable, (automated) attacks will happen and could provide a foothold in your local network

Follow the guide at <https://nodered.org/docs/user-guide/runtime/securing-node-red> to setup security.

ADDITIONAL RECOMMENDATIONS

- Remove the /etc/sudoers.d/010_pi-nopasswd file to require entering your password when performing any sudo/root commands:

```
sudo rm -f /etc/sudoers.d/010_pi-nopasswd
```

- You can customise the initial settings by running:

```
node-red admin init
```

- After running Node-RED for the first time, change the ownership of the settings file to 'root' to prevent unauthorised changes:

```
sudo chown root:root ~/.node-red/settings.js
```

Node-RED Settings File initialisation

=====

This tool will help you create a Node-RED settings file.

? Settings file - `home/seed/.node-red/settings.js`

Configure as you want.

```
Node-RED Settings File initialisation
=====
This tool will help you create a Node-RED settings file.

✓Settings file · /home/seeed/.node-red/settings.js

User Security
=====
✓Do you want to setup user security? · No

Projects
=====
The Projects feature allows you to version control your flow using a local git repository.

✓Do you want to enable the Projects feature? · No

Flow File settings
=====
✓Enter a name for your flows file · flows.json
✓Provide a passphrase to encrypt your credentials file ·

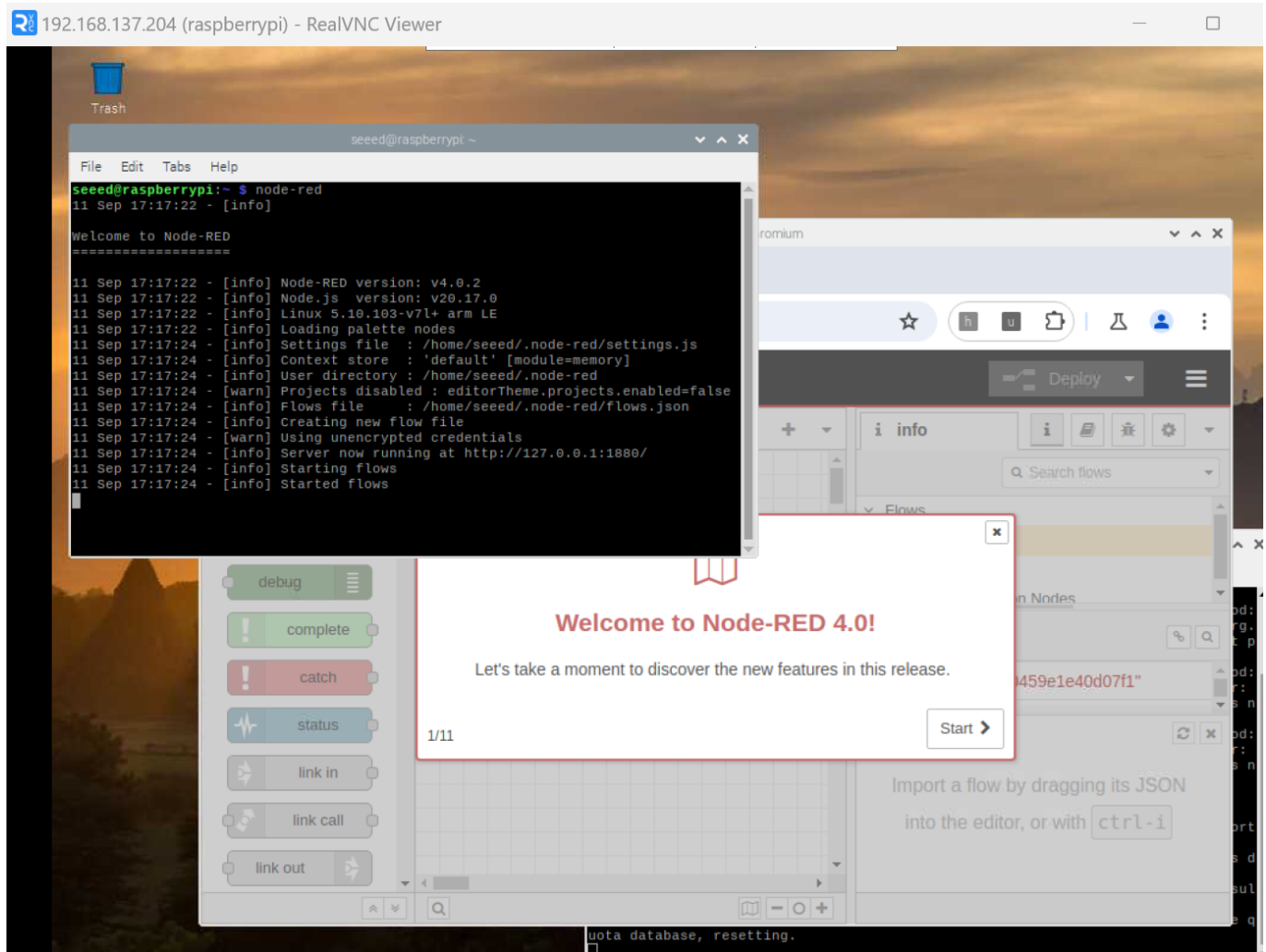
Editor settings
=====
✓Select a theme for the editor. To use any theme other than "default", you will need to install @node-red-contrib-
themes/theme-collection in your Node-RED user directory. · default

✓Select the text editor component to use in the Node-RED Editor · monaco (default)

Node settings
=====
✓Allow Function nodes to load external modules? (functionExternalModules) · Yes
```

- Launch Node-RED

```
node-red
```

So, as you can see, once we upgrade to bullseye, with the default chromium, we can easily launch the node-red web page.

For more details regarding to Node-RED launching commands, please visit:

[Running on Raspberry Pi](#)