Upgrade to Bullseye 11

Step 1 - Prepare

Stop/disable containers

Disable all containers by changing the following line in the config files lxc.start.auto = 1 –> lxc.start.auto = 0

Remove non-Debian packages

Below there are two methods for finding installed packages that did not come from Debian, using either aptitude or apt-forktracer. Please note that neither of them are 100% accurate (e.g. the aptitude example will list packages that were once provided by Debian but no longer are, such as old kernel packages).

```
# apt install apt-forktracer
# apt-forktracer | sort
```

Unofficial sources

If you have any non-Debian packages on your system, you should be aware that these may be removed during the upgrade because of conflicting dependencies. If these packages were installed by adding an extra package archive in your APT source-list files, you should check if that archive also offers packages compiled for bullseye and change the source item accordingly at the same time as your source items for Debian packages. Like kernel drivers for network cards.

Check package status

Regardless of the method used for upgrading, it is recommended that you check the status of all packages first, and verify that all packages are in an upgradable state. The following command will show any packages which have a status of Half-Installed or Failed-Config, and those with any error status.

```
# dpkg --audit
```

Step 2 - Update and upgrade all currently installed packages

The recommended way to upgrade from previous Debian releases is to use the package management tool apt. apt is meant for interactive use, and should not be used in scripts. In scripts one should use

apt-get, which has a stable output better suitable for parsing.

Upgrade

Before we start upgrade Debian buster to bullseye, make sure you've updated and upgraded all existing packages to their latest available version by running the following commands one by one:

```
# apt update
# apt upgrade
# apt dist-upgrade
```

Cleanup

Remove packages that have been previously downloaded for installation (at /var/cache/apt/archives). Cleaning up the package cache by running apt clean will remove all previously downloaded package files. And then clean any leftover packages and configuration files using commands:

```
# apt autoremove
# apt autoclean
# find /etc -name '.dpkg-' -o -name '.ucf-' -o -name '*.merge-error'
```

Reboot

Reboot your system to apply all updates.

```
# reboot
```

Upgrade individual containers

Now the host is on the latest Buster versions, upgrade also all the individual containers to the latest Buster versions. Login as root into each of the containers and perform the following steps:

```
# apt update
# apt upgrade
# apt dist-upgrade
# apt autoremove
# apt autoclean
# find /etc -name '.dpkg-' -o -name '.ucf-' -o -name '*.merge-error'
```

Check current installation size

```
df /dev/sda2
```

```
Filesystem     1K-blocks    Used Available Use% Mounted on
/dev/sda2       19091540 4450028  13648644  25% /
```

Step 3 - Update software repositories

Before updating the software repositories in Debian buster, first backup the current software source list.

```
# mkdir ~/apt
# cp /etc/apt/sources.list ~/apt
# cp -rv /etc/apt/sources.list.d/ ~/apt
```

Verify the contents of ~/apt directory to make sure the software repository lists have been copied.

```
# ls apt/
sources.list sources.list.d
```

Before starting the upgrade you must reconfigure APT source-list files (/etc/apt/sources.list and files under /etc/apt/sources.list.d/) to add sources for bullseye and typically to remove sources for buster. Now we need to update the current repository list to point to Debian 11 repositories.

To replace and update Debian 10 repositories with Debian 11 repositories, run:

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

Now verify if the sources list file is updated with new repository links:

```
# cat /etc/apt/sources.list
```

Sample output:

```
deb http://deb.debian.org/debian/ bullseye main
deb-src http://deb.debian.org/debian/ bullseye main

deb http://security.debian.org/debian-security bullseye/updates main
deb-src http://security.debian.org/debian-security bullseye/updates main

# bullseye-updates, previously known as 'volatile'
deb http://deb.debian.org/debian/ bullseye-updates main
deb-src http://deb.debian.org/debian/ bullseye-updates main

# This system was installed using small removable media
# (e.g. netinst, live or single CD). The matching "deb cdrom"
# entries were disabled at the end of the installation process.
# For information about how to configure apt package sources,
# see the sources.list(5) manual.
```

Heads Up: For Debian bullseye, the security suite is now named bullseye-security instead of codename/updates and users should adapt their APT source-list files accordingly when upgrading.

So we need to update the security lines in the APT configuration file.

Find the following lines in your sources.list file:

```
deb http://security.debian.org/debian-security bullseye/updates main
deb-src http://security.debian.org/debian-security bullseye/updates main
```

And replace them with following lines:

```
deb https://deb.debian.org/debian-security bullseye-security main contrib
deb-src https://deb.debian.org/debian-security bullseye-security main
contrib
```

After changing the security lines, the final APT sources.list file should look like below:

```
deb http://deb.debian.org/debian/ bullseye main
deb-src http://deb.debian.org/debian/ bullseye main

deb https://deb.debian.org/debian-security bullseye-security main contrib
deb-src https://deb.debian.org/debian-security bullseye-security main
contrib

# bullseye-updates, previously known as 'volatile'
deb http://deb.debian.org/debian/ bullseye-updates main
deb-src http://deb.debian.org/debian/ bullseye-updates main

# This system was installed using small removable media
# (e.g. netinst, live or single CD). The matching "deb cdrom"
# entries were disabled at the end of the installation process.
# For information about how to configure apt package sources,
# see the sources.list(5) manual.
```

Update the repository lists using command:

```
# sudo apt update
```

Step 4 - Perform minimal system upgrade

In some cases, doing a full system upgrade (which is explained in the next step) will remove large number of packages that you want to keep. So Debian developers recommends two-part upgrade process, namely minimal upgrade and full upgrade. The minimal upgrade will upgrade all existing packages without installing or removing any other packages. First, you need to do minimal upgrade using command:

```
# apt upgrade --without-new-pkgs
```

Keep an eye on the screen. During the upgrade process, you'll be asked to answer a few questions like what do you want to do with a configuration file or if you want to restart a service etc. The questions may vary depending upon the number of installed packages in your current Debian system. If the apt-listchanges package is installed, it will show important information about upgraded packages in a pager after downloading the packages. Press ENTER to read the information or simply press q to exit and return back to the upgrade process. Next you will be asked what do you want to do with a specific configuration file (E.g. pam login file). Read the instructions on the screen and decide accordingly. If you're not sure what to do, just go with defaults by simply pressing ENTER key:

Step 5 - Upgrade to Debian 11 bullseye

Now start the actual Debian 11 bullseye upgrade using command:

```
# apt full-upgrade
```

Again, you need to keep an eye on the screen and answer all questions that might come up as usual. As stated earlier, if the apt-listchanges package is installed, it will show important information about upgraded packages in a pager after downloading the packages. Press q to quit after reading the information and continue upgrade.

Once the Debian 11 upgrade process is completed, reboot your system:

```
#sudo reboot
```

Check version

Log in to the system and Check Debian 11 bullseye version using command:

```
# cat /etc/debian_version
11.0
```

Or, use lsb_release command:

```
# lsb_release -a
```

Check error logs

/var/log

Cleanup

Congratulations! We have successfully upgraded Debian 10 buster to Debian 11 bullseye.

Optionally, you can remove all packages that are no longer required using commands:

```
# apt --purge autoremove
# apt autoclean
```

Step 6 - Verify if everything works fine

Step 7 - Upgrade each individual container

Now the host is upgraded to Bullseye, upgrade also all the individual containers to Bullseye. Login as root into each of the containers and perform the following steps:

Update the source.list

```
# apt update
```

When certificate error, Might need to run:

```
# apt install ca-certificates
```

```
# apt upgrade --without-new-pkgs
# apt full-upgrade
# reboot
```

Verify if everything works fine

```
# sudo apt --purge autoremove
# sudo apt autoclean
```

Fileserver Container

No specific actions needed.

Webserver Container

Add ExecStartPre=/bin/bash -c “mkdir -p /var/log/nginx” to /lib/systemd/system/nginx.service

```
[Service]
Type=forking
PIDFile=/run/nginx.pid
ExecStartPre=/bin/bash -c "mkdir -p /var/log/nginx"
ExecStartPre=/usr/sbin/nginx -t -q -g 'daemon on; master_process on;'
ExecStart=/usr/sbin/nginx -g 'daemon on; master_process on;'
ExecReload=/usr/sbin/nginx -g 'daemon on; master_process on;' -s reload
ExecStop=-/sbin/start-stop-daemon --quiet --stop --retry QUIT/5 --pidfile
/run/nginx.pid
TimeoutStopSec=5
KillMode=mixed
```

And restart nginx:

```
# systemctl daemon-reload
# systemctl start nginx
```

Links

- https://www.debian.org/releases/stable/mips64el/release-notes/ch-upgrading.en.html
- https://ostechnix.com/upgrade-to-debian-11-bullseye-from-debian-10-buster/