# How to Install a Debian 12 (Bookworm) Minimal Server

This tutorial shows how to install a Debian 12 - Bookworm - minimal server in detail with many screenshots. The purpose of this guide is to provide a minimal setup that can be used as the basis for our other Debian 12 tutorials here at howtoforge.com.

# **1 Requirements**

To install a Debian 12 server system, you will need the following:

- The Debian Bookworm network installation CD is available here:
- 64Bit: https://cdimage.debian.org/debian-cd/current/amd64/iso-cd/debian-12.1.0-amd64-netinst.iso (x86\_64 / amd64)
- A fast Internet connection.

I will use the Debian 12.1.0 64Bit (amd64) installation media.

The Debian Download links change regularly. If the above links do not work anymore, then go here to fetch the latest Debian netinst image: <u>https://cdimage.debian.org/debian-cd/current/amd64/iso-cd/</u>.

# **2** Preliminary Note

In this tutorial, I will use the hostname *server1.example.com* with the IP address *192.168.0.100* and the gateway *192.168.0.1*. These settings might differ for you, so you have to replace them where appropriate.

# **3 The Debian Base System**

Insert your Debian 12 (Bookworm) network installation CD into your system (or a USB drive where you installed the iso file) and boot from it. When you use virtualization software like VMware or Virtualbox, then select the Debian 12 minimal iso file as the source file for the DVD drive of the VM. You don't have to burn it to a CD or DVD for that first.

Select Install (this will start the text installer - if you prefer a graphical installer, select Graphical install):



Select your language:

| C - No localization<br>Albanian - Shqip<br>Arabic - マンチ<br>Asturian - Asturianu<br>Basque - Euskara<br>Belarusian - Bosanski -<br>Bulgarian - Български<br>Catalan - Català<br>Chinese (Simplified) - 中文(简体)<br>Chinese (Traditional) - 中文(繁麗)<br>Croatian - Hrvatski<br>Czech - Čeština<br>Danish - Dansk<br>Dutch - Nederlands<br>English - English<br>Esperanto - Esperanto<br>Estonian - Eesti<br>Finnish - Suomi<br>French - Français<br>Galician - Jashoggo | Choose the language<br>also be the default<br>Language: | to be used for the inst<br>language for the instal  | ct a language<br>allation process. The selected language will<br>led system.   |
|---|---|---|--|
| German - Deutsch ↓  |   | C<br>Albanian<br>Arabic<br>Asturian<br>Basque<br>Belarusian<br>Bosnian<br>Bulgarian<br>Catalan<br>Chinese (Simplified)<br>Chinese (Traditional)<br>Croatian<br>Czech<br>Danish<br>Dutch<br>Esperanto<br>Estonian<br>Finnish<br>French<br>Galician<br>Georgian<br>German | - No localization 1<br>- Shqip<br>- புர்ச்<br>- Asturianu<br>- Euskara<br>- Беларуская<br>- Български<br>- Саtalà<br>- 中文(简体)<br>- 中文(简体)<br>- 中文(竹体)<br>- 中文(竹体)<br>- 中文(竹体)<br>- 中文(竹体)<br>- 中文(竹体)<br>- 中文(竹体)<br>- 中文(竹体)<br>- Votatki<br>- Čeština<br>- Dansk<br>- Nederlands<br>- English<br>- Esperanto<br>- Eesti<br>- Suomi<br>- Français<br>- Galego<br>- Jofingen |
| <go back=""></go>   | <go back=""></go>                                       |   |  |

Then choose your location and select the keyboard layout. the next screens will differ depending on your choices. Just select which country and keyboard layout are the right ones for you as they define the language that your Debian system will use on the shell and which keyboard layout is used. In my case, I'll have a german keyboard layout but prefer English as the language on the shell.

Select Country, territory, or area:

| [ [   | [!] Select your location  |  |
|---|---|--|
| The selected location will be used select the system locale. Normally   | to set your time zone and also for example to help<br>this should be the country where you live.  |  |
| This is a shortlist of locations based on the language you selected. Choose "other" if your location is not listed. |   |  |
| Country, territory or area:   |   |  |
| A<br>B<br>C<br>H<br>I<br>I<br>I<br>I<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S     | Antigua and Barbuda<br>Australia<br>Botswana<br>Danada<br>dong Kong<br>India<br>Irreland<br>Israel<br>dew Zealand<br>Vigeria<br>Philippines<br>Deychelles<br>Singapore<br>South Africa<br>Jnited Kingdom<br>Jnited States<br>Cambia<br>2010 |  |
| <go back=""></go>   |   |  |
|   |   |  |
|   |   |  |
| ab> moves; <space> selects; <enter> a</enter></space>   | activates buttons   |  |

Select your location, territory again, and locale and keyboard:

| [11] Select your location  | _ |
|--|---|
| The selected location will be used to set your time zone and also for example to belo  |   |
| select the system locale. Normally this should be the country where you live.  |   |
| Select the continent or region to which your location belongs.   |   |
| Continent or region:   |   |
| Africa<br>Antarctica   |   |
| Asia<br>Atlantic Ocean   |   |
| Carlobean<br>Central America   |   |
| Indian Ocean<br>North America  |   |
| Oceania<br>South America   |   |
| <go back=""></go>  |   |
|  |   |
|  |   |
|  |   |
|  |   |
| (Tab> moves; <space> selects; <enter> activates buttons</enter></space>  |   |
|  |   |
| [11] Calact your legation  |   |
| [!!] Select your location  |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.  |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.<br>Listed are locations for: Europe. Use the <go back=""> option to select a different<br/>continent or region if your location is not listed.</go>  |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.<br>Listed are locations for: Europe. Use the <go back=""> option to select a different<br/>continent or region if your location is not listed.<br/>Country, territory or area:</go>  |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.<br>Listed are locations for: Europe. Use the <go back=""> option to select a different<br/>continent or region if your location is not listed.<br/>Country, territory or area:<br/>Armenia<br/>Austria</go>  |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.<br>Listed are locations for: Europe. Use the <go back=""> option to select a different<br/>continent or region if your location is not listed.<br/>Country, territory or area:<br/>Armenia<br/>Austria<br/>Azerbaijan<br/>Belarus</go>   |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.<br>Listed are locations for: Europe. Use the <go back=""> option to select a different<br/>continent or region if your location is not listed.<br/>Country, territory or area:<br/>Armenia<br/>Austria<br/>Azerbaijan<br/>Belarus<br/>Belgium<br/>Bosnia and Herzegovina</go>  |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.<br>Listed are locations for: Europe. Use the <go back=""> option to select a different<br/>continent or region if your location is not listed.<br/>Country, territory or area:<br/>Armenia<br/>Austria<br/>Azerbaijan<br/>Belarus<br/>Belgium<br/>Bosnia and Herzegovina<br/>Bulgaria<br/>Croatia</go>   |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.<br>Listed are locations for: Europe. Use the <go back=""> option to select a different<br/>continent or region if your location is not listed.<br/>Country, territory or area:<br/>Armenia<br/>Austria<br/>Azerbaijan<br/>Belarus<br/>Belgium<br/>Bosnia and Herzegovina<br/>Bulgaria<br/>Cyprus<br/>Czechia<br/>Czechia</go>  |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.<br>Listed are locations for: Europe. Use the <go back=""> option to select a different<br/>continent or region if your location is not listed.<br/>Country, territory or area:<br/>Armenia<br/>Austria<br/>Azerbaijan<br/>Belgium<br/>Bosnia and Herzegovina<br/>Bulgaria<br/>Croatia<br/>Cyprus<br/>Czechia<br/>Denmark<br/>Estonia</go>  |   |
| [!!] Select your location<br>The selected location will be used to set your time zone and also for example to help<br>select the system locale. Normally this should be the country where you live.<br>Listed are locations for: Europe. Use the <go back=""> option to select a different<br/>continent or region if your location is not listed.<br/>Country, territory or area:<br/>Armenia<br/>Austria<br/>Azerbaijan<br/>Belarus<br/>Belgium<br/>Bosnia and Herzegovina<br/>Bulgaria<br/>Croatia<br/>Cyprus<br/>Czechia<br/>Denmark<br/>Estonia<br/>Faroe Islands<br/>Finland<br/>Enamce</go>   |   |
| [!!] Select your location         The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live.         Listed are locations for: Europe. Use the <go back=""> option to select a different continent or region if your location is not listed.         Country, territory or area:         Armenia         Azerbaijan         Belgium         Bosnia and Herzegovina         Bulgaria         Croatia         Cyprus         Czechia         Denmark         Farone Islands         Finland         France         Georgia</go>   |   |
| [11] Select your location         The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live.         Listed are locations for: Europe. Use the <go back=""> option to select a different continent or region if your location is not listed.         Country, territory or area:         Armenia         Austria         Azerbaijan         Belarus         Belgium         Bosnia and Herzegovina         Bulgaria         Croatia         Cyprus         Czechia         Denmark         Estonia         Faroe Islands         Finland         France         Georgia         Bermany         Gibraltar         Greece</go> |   |
| [11] Select your location         The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live.         Listed are locations for: Europe. Use the <go back=""> option to select a different continent or region if your location is not listed.         Country, territory or area:         Armenia         Austria         Azerbaijan         Belgium         Bosnia and Herzegovina         Bulgaria         Cyprus         Czechia         Denmark         Estonia         Fance         Georgia         Bernaruy         Gibraltar         Greece         Greenland</go>   |   |
| <pre>[11] Select your location The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live. Listed are locations for: Europe. Use the <go back=""> option to select a different continent or region if your location is not listed. Country, territory or area:</go></pre>  |   |



| Bulgarian (BDS Tayout)<br>Bulgarian (phonetic layout)<br>Burmese<br>Canadian French<br>Canadian Multilingual<br>Catalan<br>Chinese<br>Croatian<br>Czech |  |
|---|--|
| Tab> moves; <space> selects; <enter> activates buttons</enter></space>  |  |

The installer checks the installation CD and your hardware and configures the network with DHCP if there is a DHCP server in the network:

| Loading additional components   |   |
|---------------------------------|---|
| 9%<br>Retrieving finish-install |   |
|                                 |   |
|                                 |   |
|                                 |   |
|                                 |   |
|                                 |   |
| Waiting for link-local address  |   |
| 25%                             | - |
|                                 |   |
|                                 |   |
|                                 |   |
|                                 |   |

Enter hostname. In this example, my system is called *server1.example.com*, so I enter *server1*:

| Places onten the bestmann for this sustan  |                          |
|--|--------------------------|
| Please enter the hostname for this system.   |                          |
| The hostname is a single word that identifies your system to the network. If<br>know what your hostname should be, consult your network administrator. If you<br>up your own home network, you can make something up here. | you don't<br>are setting |
| Hostname:  |                          |
| server1  |                          |
| <go back=""></go>  | ontinue>                 |
|  |                          |
|  |                          |
|  |                          |
|  |                          |
|  |                          |
|  |                          |

Enter your domain name. In this example, this is *example.com*:

| The domain name is the part of your Internet address to the right of your host name.<br>is often something that ends in .com, .net, .edu, or .org. If you are setting up a h<br>network, you can make something up, but make sure you use the same domain name on al.<br>your computers.<br>Domain name: | It<br>home<br>l |
|--|-----------------|
| example.com  | 3               |
|  |                 |
| b> moves; <space> selects; <enter> activates buttons</enter></space>   |                 |

Afterward, give the root user a password:

| You need to set a password for 'root', the system administrative account. A malicious or<br>unqualified user with root access can have disastrous results, so you should take care to<br>choose a root password that is not easy to guess. It should not be a word found in<br>dictionaries, or a word that could be easily associated with you.<br>A good password will contain a mixture of letters, numbers and punctuation and should be<br>changed at regular intervals.<br>The root user should not have an empty password. If you leave this empty, the root<br>account will be disabled and the system's initial user account will be given the power to<br>become root using the "sudo" command. |
|---|
| A good password will contain a mixture of letters, numbers and punctuation and should be<br>changed at regular intervals.<br>The root user should not have an empty password. If you leave this empty, the root<br>account will be disabled and the system's initial user account will be given the power to<br>become root using the "sudo" command.   |
| The root user should not have an empty password. If you leave this empty, the root account will be disabled and the system's initial user account will be given the power to become root using the "sudo" command.  |
|   |
| Note that you will not be able to see the password as you type it.  |
| Root password:  |
| жжжжжжжжжж  |
| [] Show Password in Clear   |
| <go back=""> <continue></continue></go>   |
|   |

Confirm that password to avoid typos:

|                     | [!!] Set up users and passwords                                    |
|---------------------|--|
| Please enter the sa | me root password again to verify that you have typed it correctly. |
| Re-enter password t | o verify:  |
| жжжжжжжжжжж <u></u> |  |
| [] Show Password i  | n Clear  |
| <go back=""></go>   | <continue></continue>  |
|                     |  |
|                     |  |
|                     |  |

Create a Linux user account, use e.g. your name or nickname. For this example installation, I will choose the name "administrator" with the user name administrator (don't use the user name admin as it is a reserved name on Debian Linux):

| [!!] Set up users and passwords   |            |
|---|------------|
| A user account will be created for you to use instead of the root account for non-administrative activities.  |            |
| Please enter the real name of this user. This information will be used for instance<br>default origin for emails sent by this user as well as any program which displays or<br>the user's real name. Your full name is a reasonable choice. | as<br>uses |
| Full name for the new user:   |            |
| Administrator   |            |
| <go back=""> Continue</go>  | ≥<br>S     |
|   |            |
|   |            |
|   |            |
|   |            |
|   |            |
| <tab> moves; <space> selects; <enter> activates buttons</enter></space></tab>   |            |
|   |            |
|   |            |
|   |            |
|   |            |
|   |            |
| [!!] Set up users and passwords   |            |
| Select a username for the new account. Your first name is a reasonable choice. The username should start with a lower-case letter, which can be followed by any combina of numbers and more lower-case letters.                             | tion       |
| Username for your account:  |            |
| administrator   |            |
| <go back=""> Continue</go>  | 2          |
|   |            |
|   |            |
|   |            |
|   |            |
|   |            |
|   |            |
|   |            |

|           |  | ┥ [!!] Set up user                       | s and passwords                             |                         |  |
|-----------|--|--|---|-------------------------|--|
| Choos     | ged at regular interva.<br>se a password for the r<br><del>weekex</del><br>Show Password in Clear<br><go back=""></go> | new user:                                | ters, numbers and pur                       | Continue>               |  |
|           |  |  |   |                         |  |
| Tab≻ mov€ | es; ≺Space≻ selects; ≺t  | Enter≻ activates bu                      | ttons                                       |                         |  |
| ĺ         | Please enter the same  | ⊣ [!!] Set up user<br>user password agai | s and passwords ⊨──<br>n to verify you have | typed it correctly.     |  |
|           | <pre>xelenter password to  xelenter password to  xelenter password in (</pre>  | Dlean                                    |   | <mark>(Continue)</mark> |  |
|           |  |  |   |                         |  |

Now you have to partition your hard disk. For simplicity's sake, I select *Guided - use entire disk* - this will create a large partition for the / file system and another one for swap (of course, the partitioning is totally up to you - if you know what you're doing, you can also set up your partitions manually). For hosting systems like the ISPConfig 3 perfect server tutorials, you might want to choose e.g., 60GB for / and a large /var partition, as all website and email data is stored in subdirectories of /var.

| Loading | additional | components |  |  |
|---------|------------|------------|--|--|
| 0%      |            |            |  |  |

Retrieving partman-auto-crypto

| [11] Partition disks   |
|--|
| The installer can guide you through partitioning a disk (using different standard schemes) or, if you prefer, you can do it manually. With guided partitioning you will still have a chance later to review and customise the results. |
| If you choose guided partitioning for an entire disk, you will next be asked which disk should be used.  |
| Partitioning method:   |
| <mark>Guided - use entire disk</mark><br>Guided - use entire disk and set up LVM<br>Guided - use entire disk and set up encrypted LVM<br>Manual  |
| <go back=""></go>  |
|  |
|  |
| <go back=""></go>  |

Select the disk that you want to partition:

| [!!] Partition disks  |
|---|
| Note that all data on the disk you select will be erased, but not before you have confirmed that you really want to make the changes. |
| Select disk to partition:   |
| SCSI33 (0,0,0) (sda) - 21.5 GB VMware, VMware Virtual S<br><go back=""></go>  |
|   |
|   |
|   |
|   |
|   |

Then select the partitioning scheme. As mentioned before, I select *All files in one partition (recommended for new users)* for simplicity's sake - it's up to your liking what you choose here:

| [!] Partition disks   |
|---|
| Selected for partitioning:  |
| SCSI33 (0,0,0) (sda) - VMware, VMware Virtual S: 21.5 GB  |
| The disk can be partitioned using one of several different schemes. If you are unsure, choose the first one.                    |
| Partitioning scheme:  |
| All files in one partition (recommended for new users)<br>Separate /home partition<br>Separate /home, /var, and /tmp partitions |
| <go back=""></go>   |
|   |
|   |
|   |
|   |
|   |
| ab> moves: <space> selects: <enter> activates buttons</enter></space>   |

When you're finished, select Finish partitioning and write changes to disk:

| Guided partitioning<br>Configure software RAID<br>Configure the Logical Volume Manager<br>Configure encrypted volumes<br>Configure iSCSI volumes<br>SCSI33 (0,0,0) (sda) - 21.5 GB VMware, VMware Virtual S<br>#1 primary 20.4 GB f ext4 /<br>#5 logical 1.0 GB f swap swap |
|---|
| SCSI33 (0,0,0) (sda) - 21.5 GB VMware, VMware Virtual S<br>#1 primary 20.4 GB f ext4 /<br>#5 logical 1.0 GB f swap swap   |
| Undo changes to partitions  |
| Finish partitioning and write changes to disk   |
| <go back=""></go>   |
|   |

Select Yes when you're asked: "Write changes to disk?":

| will be able t                              | make further chan   | ed bélow will be<br>ges manually.                  | written to the dis | sks. Otherwise, you |
|---|---|--|--------------------|---------------------|
| The partition<br>SCSI33 (0,0                | tables of the follo<br>,0) (sda)                                  | wing devices are                                   | changed:           |                     |
| The following<br>partition #<br>partition # | partitions are goin<br>L of SCSI33 (0,0,0)<br>5 of SCSI33 (0,0,0) | g to be formatte<br>(sda) as ext4<br>(sda) as swap | d:                 |                     |
| Write the chan                              | ges to disks?   |  |                    |                     |
| <yes></yes>                                 |   |  |                    | <no></no>           |

Afterward, your new partitions are created and formatted. Now the partitions are created, and the base system is installed:

| Installing the base system 6%<br>Retrieving libc6 |  |
|---|--|
|   |  |
|   |  |

It might be that the following screen pop's up, depending on your install media. I will do a network-based installation (all additional installation packages get downloaded from the internet), so I choose here not to scan any additional install disks.

| Scanning un  | [!] Configure t   | he package manager ⊨<br>label:   |                        |
|--|---|--|------------------------|
| Debian GNU/  | Linux 12.1.0 _Bookworm Offic  | ial amd64 NETINST with firmware 20   | 230722-10:48           |
| You now hav<br>(apt). Norm<br>not have an                                      | e the option of scanning addition<br>ally these should be from the sa<br>y additional media, this step ca | onal media for use by the package<br>ame set as the one you booted from<br>an just be skipped. | manager<br>. If you do |
| If you wish  | to scan more media, please ins  | ert another one now.   |                        |
| Scan extra   | installation media?   |  |                        |
| <go bac<="" td=""><td>&lt;&gt;</td><td><yes></yes></td><td><no></no></td></go> | <>  | <yes></yes>  | <no></no>              |
|  |   |  |                        |
|  |   |  |                        |

Next, you must configure apt. Because we are using the Debian Netinstall CD, which contains only a minimal set of packages, we must use a network mirror. Select the country where the network mirror that you want to use is located (usually, this is the country where your Server system is located):

| [!] Configure the package manager  |
|--|
| The goal is to find a mirror of the Debian archive that is close to you on the network<br>be aware that nearby countries, or even your own, may not be the best choice.  |
| Debian archive mirror country:   |
| North Macedonia<br>Norway<br>Poland<br>Portugal<br>Romania<br>Russian Federation<br>Réunion<br>Singapore<br>Slovakia<br>Slovenia<br>South Africa<br>South Korea<br>Spain<br>Sweden<br>Switzerland<br>Taiwan<br>Thailand<br>Türkiye<br>Ukraine<br>United Kingdom<br>United States<br>Uruguay<br>Vietnam |
| <go back=""></go>  |
|  |

Then select the mirror you wish to use (e.g. *deb.debian.org*):

| [!] Configure the package manager   |
|---|
| lease select a Debian archive mirror. You should use a mirror in your country or region<br>f you do not know which mirror has the best Internet connection to you.  |
| sually, deb.debian.org is a good choice.  |
| ebian archive mirror:   |
| deb.debian.org       1         ftp.us.debian.org       1         debian.csail.mit.edu       1         mirrors.lug.mtu.edu       1         debian.cc.lehigh.edu       1         mirrors.bloomu.edu       1         mirrors.namecheap.com       1         mirror.cogentco.com       1         mirror.us.leaseweb.net       1         mirror.steadfast.net       1         mirror.keystealth.org       1         debian.uchicago.edu       1         mirror.siena.edu       1         mirror.siena.edu       1 |
| <go back=""></go>   |
|   |
| moves; <space> selects; <enter> activates buttons</enter></space>   |

Unless you use an HTTP proxy, leave the following field empty and hit *Continue*:

| [!] Configure the package manager         If you need to use a HTTP proxy to access the outside world, enter the proxy information here. Otherwise, leave this blank.         The proxy information should be given in the standard form of "http://[[user][:pass]@]host[:port]/".         HTTP proxy information (blank for none): |
|---|
| <pre> <go back=""> <continue></continue></go></pre>   |

Apt is now updating its packages database:

| Retrieving file 1 of 1 | Configuring apt |  |
|------------------------|-----------------|--|
|                        |                 |  |
|                        |                 |  |

You can skip the package usage survey by selecting *No*:

| Γ | [!] Configuring popularity-contest  |
|---|---|
|   | The system may anonymously supply the distribution developers with statistics about the most used packages on this system. This information influences decisions such as which packages should go on the first distribution CD. |
|   | If you choose to participate, the automatic submission script will run once every week, sending statistics to the distribution developers. The collected statistics can be viewed on https://popcon.debian.org/.                |
| l | This choice can be later modified by running "dpkg-reconfigure popularity-contest".   |
|   | Participate in the package usage survey?  |
|   | <yes> (No&gt;</yes>   |
|   |   |
|   |   |
|   |   |
|   |   |

We select Standard system utilities and ssh server (so that I can immediately connect to the system with an SSH client such as <u>PuTTY</u> after the installation has finished) and hit *Continue*.

Some might argue that one should not install Standard System Utilities on a minimal server. Still, in my opinion, you will need most of the standard utilities later anyway, so I will install them on this server as part of the base setup.

| At the momer<br>needs, you o<br>software.<br>Choose softw | t, only the core of the system is installed. To tune the system to your<br>an choose to install one or more of the following predefined collections of<br>mare to install: |
|---|--|
|   | < <u>Continue&gt;</u>  |

The required packages are downloaded and installed on the system:

| Retrieving file 55 of 124 | Select and install software 22% |  |
|---------------------------|---------------------------------|--|
|                           |                                 |  |
|                           |                                 |  |

When you're asked to Install the GRUB boot loader to the master boot record?, select Yes:

| Г | [!] Configuring grub-pc   |
|---|---|
| r | It seems that this new installation is the only operating system on this computer. If so, it should be safe to install the GRUB boot loader to your primary drive (UEFI partition/boot record).                                   |
|   | Warning: If your computer has another operating system that the installer failed to detect, this will make that operating system temporarily unbootable, though GRUB can be manually configured later to boot it.                 |
| L | Install the GRUB boot loader to your primary drive?   |
|   | <go back="">  &lt;</go> |
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |
| b | > moves: <space> selects: <enter> activates buttons</enter></space>   |

The installer might ask you which partition Grub shall be installed to. This server has just one hard disk, so I choose /dev/sda here.

| [1] Configuring grub-oc  |
|--|
| You need to make the newly installed system bootable, by installing the GRUB boot loader<br>on a bootable device. The usual way to do this is to install GRUB to your primary drive<br>(UEFI partition/boot record). You may instead install GRUB to a different drive (or<br>partition), or to removable media. |
| Device for boot loader installation:   |
| Enter device manually<br>/dev/sda  |
| <go back=""></go>  |
|  |
|  |
|  |
|  |
|  |

Press enter, and the Installer will install Grub and finishes the installation.

| Installing GRUB boot loader            |
|--|
| 50%<br>Running "grub-install /dev/sda" |
|  |
|  |

| Finishing the installation<br>25%<br>Retrieving file 12 of 15 |  |
|---|--|
|   |  |
|   |  |

The base system installation is now finished. Remove the Debian Netinstall CD from the CD drive and hit *continue* to reboot the system:

|     | [!!] Finish the installation<br>Installation complete<br>Installation is complete, so it is time to boot into your new system. Make sure to remove<br>the installation media, so that you boot into the new system rather than restarting the<br>installation.<br>Please choose <continue> to reboot.<br/><go back=""><br/></go></continue> |
|-----|---|
| ĩah | > moves; <space> selects; <enter> activates buttons</enter></space>   |

The first boot of the newly installed Debian 10 server: first, you will see the boot screen of the Grub Boot Loader, press enter or wait a few seconds, and the boot process will continue automatically.



A few seconds later, the login prompt should show up.



Log in with the username "root" and the root password that you have chosen during installation. When you log in by SSH, then use the username "administrator" as the root user is disabled for remote logins. Then run the command "su -":

su -

To become the root user. It is important that you use the command su with '-' or use 'su --login' as this is required to initialize the PATH variable correctly for the root user.

On to the next step...

# 4 Install The SSH Server (Optional)

If you did not install the OpenSSH server during the system installation, you can do it now:

apt -y install ssh openssh-server

From now on you can use an SSH client such as <u>PuTTY</u> and connect from your workstation to your Debian Jessie server and follow the remaining steps from this tutorial.

# **5 Install a shell editor (Optional)**

I'll use *nano* as my favorite shell text editor. Others prefer vi, which is not that easy to use for beginners. With the following command, I will install both editors:

apt -y install vim-nox nano

(You don't have to do this if you use a different text editor such as joe or the built-in editor from mc).

# **6** Configure The Network

You can get your current IP address with the command:

ip a

By default, some network tools might not be available. Install the package with the following command:

| apt install net-tools |
|-----------------------|
|                       |
|                       |

Because the Debian 12 installer has configured our system to get its network settings via DHCP, we have to change that now because a server should have a static IP address. Edit /etc/network/interfaces and adjust it to your needs (in this example setup, I will use the IP address 192.168.0.100) (please note that I replace allow-hotplug ens33 with auto ens33; otherwise, restarting the network doesn't work, and we'd have to reboot the whole system):

nano /etc/network/interfaces

The interfaces file with DHCP enabled as created by the apt installer:

# This file describes the network interfaces available on your system # and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/\*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface allow-hotplug ens33 iface ens33 inet dhcp # This is an autoconfigured IPv6 interface iface ens33 inet6 auto

Or as a screenshot:



And here is the edited interfaces file with the static IP 192.168.0.100 configured.

# This file describes the network interfaces available on your system

# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/\*

# The loopback network interface
auto lo
iface lo inet loopback

# This is an autoconfigured IPv6 interface
iface ens33 inet6 auto

The edited file should look like this:



#### Then restart your network:

| systemctl restart networking   |
|--|
| Then edit /etc/hosts. Make it look like this:  |
| nano /etc/hosts  |
| 127.0.0.1 localhost.localdomain localhost<br>192.168.0.100 server1.example.com server1   |
| <pre># The following lines are desirable for IPv6 capable hosts ::1 localhost ip6-localhost ip6-loopback ff02::1 ip6-allnodes ff02::2 ip6-allrouters</pre> |
| Now edit the hostname in case you did not select the final hostname in the installer   |
| nano /etc/hostname   |
| The /etc/hostname file contains the hostname without the domain part, so in our case just "server1".   |
| Then reboot the server to apply the hostname change:   |
| systemctl reboot   |
| After you log in again, run the following command:   |
| hostname<br>hostname -f  |

To verify that the new hostname is set correctly. The output should be:

root@server1:/home/administrator# hostname
server1
root@server1:/home/administrator# hostname -f
server1.example.com
root@server1:/home/administrator#

# **7 Update Your Debian Installation**

First, ensure that your /etc/apt/sources.list contains the bookworm-updates repository (this ensures you always get the newest updates), and that the *contrib*, *non-free*, and *non-free-firmware* repositories are enabled.

nano /etc/apt/sources.list #deb cdrom:[Debian GNU/Linux 12.1.0 \_Bookworm\_ - Official amd64 NETINST with firmware 20230722-10:48]/ bookworm main non-free-firmware deb http://deb.debian.org/debian/ bookworm main contrib non-free non-free-firmware deb-src http://deb.debian.org/debian/ bookworm main contrib non-free non-free-firmware deb http://security.debian.org/debian-security bookworm-security main contrib non-free non-free-firmware deb-src http://security.debian.org/debian-security bookworm-security main contrib non-free non-free-firmware # bookworm-updates, to get updates before a point release is made; # see https://www.debian.org/doc/manuals/debian-reference/ch02.en.html# updates and backports deb http://deb.debian.org/debian/ bookworm-updates main contrib non-free non-free-firmware deb-src http://deb.debian.org/debian/ bookworm-updates main contrib non-free non-free-firmware # 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. Run

apt update

to update the apt package database and

apt upgrade

to install the latest updates (if there are any).

## 8 Debian 12 VMWare Server Image

This tutorial is available as a ready-to-use virtual machine image in ovf/ova format that is compatible with VMWare and Virtualbox. The virtual machine image uses the following login details:

#### SSH / Shell Login

Username: administrator Password: howtoforge

Username: root Password: howtoforge

The IP of the VM is 192.168.0.100. It can be changed in the file /etc/network/interfaces. Please change all the above passwords to secure the virtual machine.

### 9 Links

Debian: <u>http://www.debian.org/</u>

This PDF file is provided by howtoforge.com <u>https://www.howtoforge.com</u>. (c) projektfarm GmbH - republishing not permitted.

# The Perfect Server - Debian 12 (Bookworm) with Apache, BIND, Dovecot, PureFTPD and ISPConfig 3.2

This tutorial shows how to prepare a Debian 12 server (with Apache2, BIND, Dovecot) for the installation of <u>ISPConfig 3.2</u>, and how to install ISPConfig. The web hosting control panel ISPConfig 3 allows you to configure the following services through a web browser: Apache or nginx web server, Postfix mail server, Dovecot IMAP/POP3 server, MySQL, BIND nameserver, PureFTPd, Rspamd or Amavis, ClamAV, and many more. This setup covers Apache (instead of nginx), BIND, and Dovecot with Rspamd spam scanner.

This tutorial shows the manual installation procedure for ISPConfig, which takes some time but gives you full control over all installation steps. The fast and easy installation method (which we highly recommend!) is to use the ISPConfig auto-installer instead. You can find the ISPConfig installation tutorial for the auto-installer here: <u>https://www.howtoforge.com/ispconfig-autoinstall-debian-ubuntu/</u>

## **1** Preliminary Note

In this tutorial, I will use the hostname *server1.example.com* with the IP address *192.168.0.100* and the gateway *192.168.0.1*. These settings might differ for you, so you have to replace them where appropriate. Before proceeding further, you need to have a minimal installation of Debian 12. This might be a Debian minimal image from your Hosting provider or you use the <u>Minimal Debian Server</u> tutorial to set up the base system.

All commands below are run as root user. Either login as the root user directly or log in as your regular user and then use the command

su -

to become the root user on your server before you proceed. **IMPORTANT**: You must use 'su -' and not just 'su', otherwise, your PATH variable is set wrong by su.

Ensure that your */etc/apt/sources.list* contains the bookworm-updates repository (this ensures you always get the newest updates), and that the *contrib*, *non-free* and *non-free-firmware* repositories are enabled.

nano /etc/apt/sources.list

#deb cdrom:[Debian GNU/Linux 12.1.0 \_Bookworm\_ - Official amd64 NETINST with firmware 20230722-10:48]/ bookworm main non-free-firmware

deb http://deb.debian.org/debian/ bookworm main contrib non-free non-free-firmware
deb-src http://deb.debian.org/debian/ bookworm main contrib non-free non-free-firmware

deb http://security.debian.org/debian-security bookworm-security main contrib non-free non-free-firmware deb-src http://security.debian.org/debian-security bookworm-security main contrib non-free non-free-firmware

# bookworm-updates, to get updates before a point release is made; # see https://www.debian.org/doc/manuals/debian-reference/ch02.en.html#\_updates\_and\_backports deb http://deb.debian.org/debian/ bookworm-updates main contrib non-free non-free-firmware deb-src http://deb.debian.org/debian/ bookworm-updates main contrib non-free non-free-firmware

# 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.

Save the file.

# 2 Install the SSH server (Optional)

If you did not install the OpenSSH server during the system installation, you can do it now:

apt install ssh openssh-server

From now on, you can use an SSH client such as <u>PuTTY</u> and connect from your workstation to your Debian server and follow the remaining steps from this tutorial.

# **3 Install a shell text editor (Optional)**

We will use *nano* text editor in this tutorial. Some users prefer the classic vi editor, therefore, we will install both editors here. The default *vi* program has some strange behavior on Debian and Ubuntu; to fix this, we install *vim-nox*:

apt install nano vim-nox

If vi is your favorite editor, replace nano with vi in the following commands to edit files.

# 4 Configure the Hostname

The hostname of your server should be a subdomain like "server1.example.com". Do not use a domain name without subdomain part like "example.com" as hostname as this will cause problems later with your mail setup. First, you should check the hostname in /etc/hosts and change it when necessary. The line should be: "IP Address - space - full hostname incl. domain - space - subdomain part". For our hostname server1.example.com, the file shall look like this:

nano /etc/hosts

127.0.0.1 localhost.localdomain localhost 192.168.0.100 server1.example.com server1

# The following lines are desirable for IPv6 capable hosts ::1 localhost ip6-localhost ip6-loopback ff02::1 ip6-allnodes ff02::2 ip6-allrouters

Then edit the /etc/hostname file:

nano /etc/hostname

It shall contain only the subdomain part, in our case:

server1

Finally, reboot the server to apply the change:

systemctl reboot

Log in again and check if the hostname is correct now with these commands:

hostname hostname -f

The output shall be like this:

root@server1:/tmp# hostname
server1
root@server1:/tmp# hostname -f
server1.example.com

## **5 Update your Debian Installation**

First, ensure that your /etc/apt/sources.list contains the bookworm/updates repository (this ensures you always get the newest security updates), and that the *contrib*, *non-free* and *non-free-firmware* repositories are enabled, as some required packages are not in the main repository.

nano /etc/apt/sources.list

#deb cdrom:[Debian GNU/Linux 12.1.0 \_Bookworm\_ - Official amd64 NETINST with firmware 20230722-10:48]/ bookworm main non-free-firmware

deb http://deb.debian.org/debian/ bookworm main contrib non-free non-free-firmware
deb-src http://deb.debian.org/debian/ bookworm main contrib non-free non-free-firmware

deb http://security.debian.org/debian-security bookworm-security main contrib non-free non-free-firmware
deb-src http://security.debian.org/debian-security bookworm-security main contrib non-free non-free-firmware

# bookworm-updates, to get updates before a point release is made; # see https://www.debian.org/doc/manuals/debian-reference/ch02.en.html#\_updates\_and\_backports deb http://deb.debian.org/debian/ bookworm-updates main contrib non-free non-free-firmware deb-src http://deb.debian.org/debian/ bookworm-updates main contrib non-free non-free-firmware

- # 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.

Run:

apt update To update the apt package database apt upgrade

and to install the latest updates (if there are any).

# **6** Synchronize the System Clock

It is a good idea to synchronize the system clock with an NTP (network time protocol) server over the Internet. Simply run

apt -y install ntp

and your system time will always be in sync.

# 7 Install Postfix, Dovecot, MariaDB, rkhunter, and Binutils

We can install Postfix, Dovecot, MariaDB as a MySQL alternative, rkhunter, and Binutils with a single command:

apt -y install postfix postfix-mysql postfix-doc mariadb-client mariadb-server openssl getmail6 rkhunter binutils dovecot-imapd dovecotpop3d dovecot-mysql dovecot-sieve dovecot-lmtpd sudo curl rsyslog wget gnupg2 lsb-release ufw

You will be asked the following questions:

General type of mail configuration: <-- Internet Site System mail name: <-- server1.example.com

To secure the MariaDB installation and to disable the test database, run this command:

mysql\_secure\_installation

Answer the questions as follows:

Switch to unix\_socket authentication [Y/n] <--n Change the root password? [Y/n] <--y New password: <-- Enter new password Re-enter new password: <-- Repeat new password Remove anonymous users? [Y/n] <--y Disallow root login remotely? [Y/n] <--y Remove test database and access to it? [Y/n] <--y Reload privilege tables now? [Y/n] <--y

Next, open the TLS/SSL and submission ports in Postfix:

nano /etc/postfix/master.cf

Uncomment the *submission* and *submissions* sections as follows and add lines where necessary so that this section of the master.cf file looks exactly like the one below. **IMPORTANT:** Remove the # in front of the lines that start with submissions and submission too and not just from the -o lines after these lines!

| Livij  |
|--|
| #127.0.0.1:Submission inet n - y Smtpd   |
| sublission inet n - y smipa  |
| -o systog_name=post1x/submission   |
| -0 smtpd_tts_security_level=encrypt  |
| -o smtpd_sasi_auth_enable=yes  |
| # -O smtpd_tls_auth_only=yes   |
| # -o smtpd_reject_unlisted_recipient=no  |
| <pre># Instead of specifying complex smtpd_restrictions here,</pre>  |
| <pre># specify "smtpdrestrictions=\$mua_restrictions"</pre>  |
| <pre># here, and specify mua_restrictions in main.cf (where</pre>  |
| <pre># "" is "client", "helo", "sender", "relay", or "recipient").</pre>   |
| # -o smtpd_client_restrictions=  |
| # -o smtpd_helo_restrictions=  |
| # -o smtpd_sender_restrictions=  |
| <pre># -o smtpd_relay_restrictions=</pre>  |
| # -o smtpd_recipient_restrictions=permit_sasl_authenticated,reject   |
| <pre># -o milter_macro_daemon_name=ORIGINATING</pre>   |
| # Choose one: enable submissions for loopback clients only, or for any client.   |
| #127.0.0.1:submissions inet n - y smtpd  |
| submissions inet n - y smtpd   |
| -o syslog_name=postfix/submissions   |
| -o smtpd_tls_wrappermode=yes   |
| -o smtpd_sasl_auth_enable=yes  |
| # -o smtpd_reject_unlisted_recipient=no  |
| # Instead of specifying complex smtpdrestrictions here,  |
| <pre># specify "smtpd_restrictions=\$mua_restrictions"</pre>   |
| # here, and specify mua_restrictions in main.cf (where   |
| <pre># "" is "client", "helo", "sender", "relay", or "recipient").</pre>   |
|  |
| <pre># -o smtpd_client_restrictions=</pre>   |
| <pre># -o smtpd_client_restrictions= # -o smtpd_helo_restrictions=</pre>   |
| <pre># -o smtpd_client_restrictions= # -o smtpd_helo_restrictions= # -o smtpd_sender_restrictions=</pre>   |
| <pre># -o smtpd_client_restrictions=<br/># -o smtpd_helo_restrictions=<br/># -o smtpd_sender_restrictions=<br/># -o smtpd_relay_restrictions=</pre>  |
| <pre># -o smtpd_client_restrictions=<br/># -o smtpd_helo_restrictions=<br/># -o smtpd_sender_restrictions=<br/># -o smtpd_relay_restrictions=<br/># -o smtpd_recipient_restrictions=permit_sasl_authenticated,reject</pre>   |
| <pre># -o smtpd_client_restrictions=<br/># -o smtpd_helo_restrictions=<br/># -o smtpd_sender_restrictions=<br/># -o smtpd_relay_restrictions=<br/># -o smtpd_recipient_restrictions=permit_sasl_authenticated,reject<br/># -o milter_macro_daemon_name=ORIGINATING</pre>         |
| <pre># -o smtpd_client_restrictions= # -o smtpd_helo_restrictions= # -o smtpd_sender_restrictions= # -o smtpd_relay_restrictions= # -o smtpd_recipient_restrictions=permit_sasl_authenticated,reject # -o milter_macro_daemon_name=ORIGINATING #628 inet n - y - qmqpd</pre>     |
| <pre># -o smtpd_client_restrictions= # -o smtpd_helo_restrictions= # -o smtpd_sender_restrictions= # -o smtpd_relay_restrictions= # -o smtpd_recipient_restrictions=permit_sasl_authenticated, reject # -o milter_macro_daemon_name=ORIGINATING #628 inet n - y - qmqpd []</pre> |

Restart Postfix afterward:

systemctl restart postfix

If you want MySQL to listen on all interfaces, not just localhost, to allow access to MySQL from desktop tools, then edit /etc/mysql/mariadb.conf.d/50-server.cnf and comment out the line bind-address = 127.0.0.1 by adding a # in front of it.

nano /etc/mysql/mariadb.conf.d/50-server.cnf

```
[...]
# Instead of skip-networking the default is now to listen only on
# localhost which is more compatible and is not less secure.
#bind-address = 127.0.0.1
```

[...]

Edit the file /etc/mysql/debian.cnf and set the MYSQL / MariaDB root password there twice in the rows that start with the word password.

nano /etc/mysql/debian.cnf

The MySQL root password that needs to be added is shown in red. In this example, the password is "howtoforge".

# Automatically generated for Debian scripts. D0 NOT TOUCH!
[client]
host = localhost
user = root
password = "howtoforge"
[mysql\_upgrade]
host = localhost
user = root
password = "howtoforge"

To prevent the error '*Error in accept: Too many open files*' we will set higher open file limits for MariaDB now.

Open the file /etc/security/limits.conf with an editor:

nano /etc/security/limits.conf

and add these lines at the end of the file.

mysql soft nofile 65535 mysql hard nofile 65535

Next, create a new directory /etc/systemd/system/mysql.service.d/ with the mkdir command.

mkdir -p /etc/systemd/system/mysql.service.d/

and add a new file inside:

nano /etc/systemd/system/mysql.service.d/limits.conf

paste the following lines into that file:

[Service] LimitNOFILE=infinity

Save the file and close the nano editor.

Then we reload systemd and restart MariaDB:

systemctl daemon-reload systemctl restart mariadb

Now check that networking is enabled. Run

netstat -tap | grep mysql

The output should look like this:

root@server1:/home/administrator# netstat -tap | grep mysql
tcp6 0 0 [::]:mysql [::]:\* LISTEN 16623/mysqld

## 8 Install Email filter and signing software Rspamd and ClamAV

Add the Rspamd repository:

To install Rspamd and ClamAV, we run
apt install rspamd redis clamav clamav-daemon unzip bzip2 arj nomarch lzop cabextract p7zip p7zip-full unrar lrzip apt-listchanges libnetldap-perl libauthen-sasl-perl clamav-docs daemon libio-string-perl libio-socket-ssl-perl libnet-ident-perl zip libnet-dns-perl libdbd-mysglperl postgrey -y
Activate Redis in Rspamd configuration.

echo 'servers = "127.0.0.1";' > /etc/rspamd/local.d/redis.conf

Increase the Rspamd history, enable compression and show the subject in the history. This step is optional.

echo "deb-src [arch=amd64] http://rspamd.com/apt-stable/ \$CODENAME main" >> /etc/apt/sources.list.d/rspamd.list

echo "nrows = 2500;" > /etc/rspamd/local.d/history\_redis.conf echo "compress = true;" >> /etc/rspamd/local.d/history\_redis.conf echo "subject\_privacy = true;" >> /etc/rspamd/local.d/history\_redis.conf

#### Then restart Rspamd.

systemctl restart rspamd

### 9 Install Apache Web Server and PHP

Apache2, PHP, FCGI, suExec, Pear, and mcrypt can be installed as follows:

apt -y install apache2 apache2-utils php8.2 php8.2-fpm php8.2-common php8.2-gd php8.2-mysql php8.2-imap php8.2-cli php8.2-cgi libapache2mod-fcgid apache2-suexec-pristine php-pear mcrypt imagemagick libruby libapache2-mod-python php8.2-curl php8.2-intl php8.2-pspell php8.2sqlite3 php8.2-tidy php8.2-xmlrpc php8.2-xsl memcached php-memcache php-imagick php8.2-zip php8.2-mbstring memcached libapache2-modpassenger php8.2-soap php8.2-opcache php-apcu libapache2-reload-perl php8.2-mcrypt

Now enable php-fpm in Apache:

a2enmod proxy\_fcgi setenvif
a2enconf php8.2-fpm

Then run the following command to enable the additional Apache modules *suexec*, *rewrite*, *ssl*, *actions*, and *include* (plus *dav*, *dav\_fs*, and *auth\_digest* if you want to use WebDAV):

a2enmod suexec rewrite ssl actions include dav\_fs dav auth\_digest cgi headers actions alias

To ensure that the server cannot be attacked through the <u>HTTPOXY vulnerability</u>, we will disable the HTTP\_PROXY header in apache globally by adding the configuration file /etc/apache2/conf-available/httpoxy.conf.

**Note:** The vulnerability is named httpoxy (without 'r') and therefore the file where we add the config to prevent it is named httpoxy.conf and not httproxy.conf, so there is no 'r' missing in the filename.

```
nano /etc/apache2/conf-available/httpoxy.conf
```

Paste the following content to the file:

<IfModule mod\_headers.c> RequestHeader unset Proxy early </IfModule>

And enable the module by running:

```
a2enconf httpoxy
systemctl restart apache2
```

## **10 Install Let's Encrypt**

ISPConfig is using acme.sh now as Let's Encrypt client. Install acme.sh using the following command:

curl https://get.acme.sh | sh -s

## **11 Install PureFTPd and Quota**

PureFTPd and quota can be installed with the following command:

apt install pure-ftpd-common pure-ftpd-mysql quota quotatool

Create the dhparam file for pure-ftpd:

openssl dhparam -out /etc/ssl/private/pure-ftpd-dhparams.pem 2048 Edit the file /etc/default/pure-ftpd-common...

... and make sure that the start mode is set to *standalone* and set *VIRTUALCHROOT=true*:

[...]
STANDALONE\_OR\_INETD=standalone
[...]
VIRTUALCHROOT=true
[...]

nano /etc/default/pure-ftpd-common

Now we configure PureFTPd to allow FTP and TLS sessions. FTP is a very insecure protocol because all passwords and all data are transferred in clear text. By using TLS, the whole communication can be encrypted, thus making FTP much more secure.

If you want to allow FTP and TLS sessions, run

echo 1 > /etc/pure-ftpd/conf/TLS

To use TLS, we must create an SSL certificate. I create it in /etc/ssl/private/, therefore I create that directory first:

mudir\_\_p\_(otc/cc]/private/

mkdir -p /etc/ssl/private/

#### Afterwards, we can generate the SSL certificate as follows:

openssl req -x509 -nodes -days 7300 -newkey rsa:2048 -keyout /etc/ssl/private/pure-ftpd.pem -out /etc/ssl/private/pure-ftpd.pem

Country Name (2 letter code) [AU]: <-- Enter your Country Name (e.g., "DE"). State or Province Name (full name) [Some-State]: <-- Enter your State or Province Name. Locality Name (eg, city) []: <-- Enter your City. Organization Name (eg, company) [Internet Widgits Pty Ltd]: <-- Enter your Organization Name (e.g., the name of your company). Organizational Unit Name (eg, section) []: <-- Enter your Organizational Unit Name (e.g. "IT Department"). Common Name (eg, YOUR name) []: <-- Enter the Fully Qualified Domain Name of the system (e.g. "server1.example.com"). Email Address []: <-- Enter your Email Address.

Change the permissions of the SSL certificate:

chmod 600 /etc/ssl/private/pure-ftpd.pem

### Then restart PureFTPd:

systemctl restart pure-ftpd-mysql

Edit /*etc/fstab*. Mine looks like this (I added ,*usrjquota=quota.user,grpjquota=quota.group,jqfmt=vfsv0* to the partition with the mount point /):

nano /etc/fstab

# /etc/fstab: static file system information.

# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sda1 during installation
UUID=45576b38-39e8-4994-b8c1-ea4870e2e614 / ext4 errors=remount-ro\_usrjquota=quota.user.grpjquota=quota.group.jqfmt=vfsv0 0 1
# swap was on /dev/sda5 during installation
UUID=8bea0d1e-ec37-4b20-9976-4b7daaa3eb69 none swap sw 0 0
/dev/sr0 /media/cdrom0 udf,iso9660 user,noauto 0 0

To enable quota, run these commands:

mount -o remount / systemctl daemon-reload quotacheck -avugm quotaon -avug

You will get the message "quotaon: Your kernel probably supports ext4 quota feature but you are using external quota files. Please switch your filesystem to use ext4 quota feature as external quota files on ext4 are deprecated." which is ok and can be ignored.

# **12 Install BIND DNS Server**

BIND can be installed as follows:

apt install bind9 dnsutils

If your server is a virtual machine, then it is highly recommended to install the haveged daemon to get a higher entropy for DNSSEC signing. You can install haveged on nonvirtual servers as well, it should not hurt.

apt install haveged

An explanation on that topic can be found here.

# 13 Install Webalizer replacement awffull, AWStats and GoAccess

Webalizer and AWStats can be installed as follows:

apt install awffull awstats geoip-database libclass-dbi-mysql-perl libtimedate-perl

Create webalizer directory and symlink so awffull is recognized as webalizer:

mkdir /etc/webalizer chmod 0755 /etc/webalizer ln -s /etc/awffull/awffull.conf /etc/webalizer/webalizer.conf ln -s /usr/bin/awffull /usr/bin/webalizer

Open /etc/cron.d/awstats afterwards...

nano /etc/cron.d/awstats

... and comment out everything in that file:

#MAILTO=root

```
#*/10 * * * * www-data [ -x /usr/share/awstats/tools/update.sh ] && /usr/share/awstats/tools/update.sh
```

```
# Generate static reports:
#10 03 * * * www-data [ -x /usr/share/awstats/tools/buildstatic.sh ] && /usr/share/awstats/tools/buildstatic.sh
```

Installing the latest GoAccess version directly from the GoAccess repository:

```
echo "deb https://deb.goaccess.io/ $(lsb_release -cs) main" | tee -a /etc/apt/sources.list.d/goaccess.list
wget -0 - https://deb.goaccess.io/gnugpg.key | tee /etc/apt/trusted.gpg.d/goaccess.asc >/dev/null
apt update
apt install goaccess
```

# 14 Install Jailkit

Jailkit is needed only if you want to chroot SSH users. It can be installed as follows:

apt install jailkit

## 15 Install fail2ban and UFW Firewall

This is optional but recommended, because the ISPConfig monitor tries to show the log:

apt install fail2ban

To make fail2ban monitor PureFTPd and Dovecot, create the file /etc/fail2ban/jail.local:

nano /etc/fail2ban/jail.local

And add the following configuration to it.

[pure-ftpd] enabled = true port = ftp filter = pure-ftpd logpath = /var/log/syslog maxretry = 3

[dovecot]
enabled = true
filter = dovecot

```
logpath = /var/log/mail.log
maxretry = 5
[postfix-sasl]
enabled = true
port = smtp
filter = postfix[mode=auth]
logpath = /var/log/mail.log
maxretry = 3
Restart fail2ban afterwards:
    systemctl restart fail2ban
To install the UFW firewall, run this apt command:
    apt install ufw
```

# 16 Install PHPMyAdmin Database Administration Tool

Install phpMyAdmin with apt:

apt install phpmyadmin

Chose to enable phpMyAdmin in Apache:

| Please choose the                  | web server that should be an | atomatically configured to run ph | pMyAdmin. |
|------------------------------------|------------------------------|-----------------------------------|-----------|
| Web server to rec                  | onfigure automatically:      |                                   |           |
| <pre>[] apache2 [ ] lighttpd</pre> |                              |                                   |           |
|                                    | <0k>                         |                                   |           |
|                                    |                              |                                   |           |

Configure PHPMyAdmin using dbconfig common.

| The phymyadmin package must have a database installed  | and configured before it can be used. This can be optionally handled with dbconfig-common.   |
|--|--|
| of was are an advanced database administrator and mov  |  |
| should refuse this option. Details on what needs to be | that you want to perform this configuration manually, or if your database has already been installed and configured, yo<br>done should most likely be provided in /usr/share/doc/phpmyadmin. |
| Otherwise, you should probably choose this option.     |  |
| Configure database for phpmyadmin with dbconfig-common | 1  |
|  | cito -   |
|  |  |
|  |  |
|  |  |

Leave the application password field empty and press return. Apt will create a secure random password automatically, and you do not need to know this password to access PHPMyAdmin later.



# **17 Install RoundCube Webmail (optional)**

In this chapter, we will install the RoundCube webmail client.

Then install RoundCube with this command:

apt install roundcube roundcube-core roundcube-mysql roundcube-plugins

The installer will ask the following questions:

Configure database for roundcube with dbconfig.common? <-- yes MySQL application password for roundcube: <-- press enter

Then edit the Apache RoundCube configuration file /etc/apache2/conf-enabled/roundcube.conf:

nano /etc/apache2/conf-enabled/roundcube.conf

And add an alias line for the apache /webmail alias and one for /roundcube, you can add the line right at the beginning of the file. NOTE: Do not use /mail as alias or the ispconfig email module will stop working!

Alias /roundcube /var/lib/roundcube/public\_html Alias /webmail /var/lib/roundcube/public\_html

#### Then reload Apache:

systemctl reload apache2

Now edit the RoundCube Configuration file:

nano /etc/roundcube/config.inc.php

And change the line:

\$config['smtp\_host'] = 'localhost:587';

to:

\$config['smtp\_host'] = 'localhost:25';

Now you can access RoundCube as follows:

https://192.168.0.100:8081/webmail
https://www.example.com:8081/webmail

After you have installed ISPConfig, see the next chapter.



Some plugins exist to integrate RoundCube Webmail with ISPConfig, have a look here for the <u>ISPConfig RoundCube plugin</u> installation instructions.

# 18 Download ISPConfig 3.2

To install ISPConfig 3 from the latest released version, do this:

```
cd /tmp
wget http://www.ispconfig.org/downloads/ISPConfig-3-stable.tar.gz
tar xfz ISPConfig-3-stable.tar.gz
cd ispconfig3_install/install/
```

# **19 Install ISPConfig**

The next step is to run the ISPConfig installer.

php -q install.php

This will start the ISPConfig 3 installer. The installer will configure all services, like Postfix, Dovecot, etc., for you.

php -q install.php

>> Initial configuration

Operating System: Debian 12.0 (Bookworm) or compatible

Following will be a few questions for primary configuration so be careful. Default values are in [brackets] and can be accepted with <ENTER>. Tap in "quit" (without the quotes) to stop the installer.

Select language (en, de) [en]: <-- press enter

Installation mode (standard, expert) [standard]: <-- press enter</pre>

Full qualified hostname (FQDN) of the server, eg server1.domain.tld [server1.example.com]: <-- press enter

MySQL server hostname [localhost]: <-- press enter</pre>

MySQL server port [3306]: <-- press enter

MySQL root username [root]: <-- press enter

MySQL root password []: <-- enter the MySQL root password

MySQL database to create [dbispconfig]: <-- press enter</pre>

MySQL charset [utf8]:

Checking MariaDB version 10.11.3 .. OK Configuring Postgrey Configuring Postfix [....]

You are about to be asked to enter information that will be incorporated into your certificate request.

What you are about to enter is what is called a Distinguished Name or a DN.

There are quite a few fields but you can leave some blank For some fields there will be a default value, If you enter '.', the field will be left blank. Country Name (2 letter code) [AU]: <-- Enter country code State or Province Name (full name) [Some-State]: <-- Enter state Locality Name (eg, city) []: <-- Enter City 

 Corganization Name (eg, company) [Internet Widgits Pty Ltd]: <-- Enter company name</td>

 Organizational Unit Name (eg, section) []: <-- press enter</td>

 Common Name (e.g. server FQDN or YOUR name) []: <-- Enter server hostname</td>

 Email Address []: <-- Enter email address</td>

 [INFO] service Mailman not detected Configuring Dovecot Creating new DHParams file, this takes several minutes. Do not interrupt the script. Generating DH parameters, 2048 bit long safe prime [....] [INFO] service Spamassassin not detected [INFO] service Amavisd not detected Configuring Rspamd Configuring Getmail Configuring Jailkit Configuring Pureftpd Configuring BIND Configuring Apache Configuring vlogger [INFO] service OpenVZ not detected Configuring AppArmor Configuring Ubuntu Firewall [INFO] service Metronome XMPP Server not detected Configuring Fail2ban Installing ISPConfig ISPConfig Port [8080]: <-- press enter Admin password [8563a921]: <-- Enter your ISPConfig admin password, or press enter to accept the one that is shown

Do you want a secure (SSL) connection to the ISPConfig web interface (y,n) [y]: <- press enter

Checking / creating certificate for server1.example.com Using certificate path /etc/letsencrypt/live/server1.example.com Server's public ip(s) (91.38.138.191, 2003:e1:bf42:2500:20c:29ff:fe32:617f) not found in A/AAAA records for server1.example.com: Ignore DNS check and continue to request certificate? (y,n) [n]: <-- press enter

Could not issue letsencrypt certificate, falling back to self-signed. [....] You are about to be asked to enter information that will be incorporated into your certificate request. What you are about to enter is what is called a Distinguished Name or a DN. There are quite a few fields but you can leave some blank For some fields there will be a default value, If you enter '.', the field will be left blank. -----Country Name (2 letter code) [AU]: <-- Enter country code State or Province Name (full name) [Some-State]: <-- Enter state Locality Name (eg, city) []: <-- Enter City Organization Name (eg, company) [Internet Widgits Pty Ltd]: <-- Enter company name Organizational Unit Name (eg, section) []: <-- press enter Common Name (e.g. server FQDN or YOUR name) []: <-- Enter server hostname Email Address []: <-- Enter email address Symlink ISPConfig SSL certs to Postfix? (y,n) [y]: <-- press Enter

Symlink ISPConfig SSL certs to Pure-FTPd? Creating dhparam file may take some time. (y,n) [y]: <-- press Enter

Configuring Apps vhost Configuring DBServer Installing ISPConfig crontab no crontab for getmail Detect IP addresses Restarting services ... Installation completed.

The installer automatically configures all underlying services, so no manual configuration is needed.

Afterwards, you can access ISPConfig 3 under *http(s)://server1.example.com:8080/* or *http(s)://192.168.0.100:8080/* ( http or https depends on what you chose during installation). Log in with the username *admin* and the password *admin* (you should change the default password after your first login):

|  |                  | Ę        | ,) ISPCC   | INFIG         |         |              |              |
|--|------------------|----------|------------|---------------|---------|--------------|--------------|
|  |                  | Username |            |               |         |              |              |
|  |                  | Password | Login      | Password lost |         |              |              |
|  |                  |          |            |               |         |              |              |
|  |                  |          |            |               |         |              |              |
|  |                  |          |            |               |         |              |              |
| ISPCONFIG  |                  |          |            |               | Search  | Q            | LOGOUT ADMIN |
| Help Home  | Client           | Sites    | Email      | A.<br>DNS     | Monitor | X<br>Tools   | System       |
| Latest news  | Welcome          | admin    |            |               |         |              |              |
| 2023-08-08<br>ISPConfig 3.2.11 Released                    | Available M      | odules   |            |               |         |              |              |
| 2023-07-20<br>ISPConfig 3.2.10p2 Released                  | Help             | 23       | Client     | Sites         | Ŕ       | Email        |              |
| 2023-06-12<br>ISPConfig 3.2.10p1 Released                  | Go to Help       | 00       | to Client  | Go to Sites   |         | Go to Email  |              |
| 2023-06-02<br>ISPConfig 3.2.10 Released                    | A DNS            | 6        | Monitor    | Tools         |         | System       |              |
| 2023-05-26<br>ISPConfig 3.2.10 beta 1 Released for testing | Go to DNS        | Go       | to Monitor | Go to Tools   |         | Go to System |              |
| 2023-02-06<br>ISPConfig 3.2.9p1 Released                   |                  |          |            |               |         |              |              |
|  | Website Harddisk | k Quota  |            |               |         |              |              |

The system is now ready to be used.

# 20 ISPConfig 3 Manual

To learn how to use ISPConfig 3, I strongly recommend downloading the ISPConfig 3 Manual.

On more than 300 pages, it covers the concept behind ISPConfig (admin, resellers, clients), explains how to install and update ISPConfig 3, includes a reference for all forms and form fields in ISPConfig together with examples of valid inputs, and provides tutorials for the most common tasks in ISPConfig 3. It also outlines how to make your server more secure and has a troubleshooting section.

# **21 Virtual Machine Image Download of this Tutorial**

This tutorial is available as ready to-use virtual machine image in ovf/ova format that is compatible with VMWare and Virtualbox. The virtual machine image uses the following login details:

### SSH / Shell Login

Username: administrator Password: howtoforge

Username: root Password: howtoforge

### **ISPConfig Login**

Username: admin Password: howtoforge

### MySQL Login

Username: root Password: I7DFg3!cpHfw3bxZj6Fg The IP of the VM is 192.168.0.100. It can be changed in the file /etc/network/interfaces. Please change all the above passwords to secure the virtual machine.

# 23 Links

- Debian: <u>http://www.debian.org/</u>
  ISPConfig: <u>http://www.ispconfig.org/</u>

This PDF file is provided by howtoforge.com <u>https://www.howtoforge.com</u>. (c) projektfarm GmbH - republishing not permitted.