



**acontis technologies GmbH**

**SOFTWARE**

# **Hypervisor-UbuntuGuest-Guide**

**acontis Real-time Hypervisor and Ubuntu guest**

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As no OS is installed yet, the guest will boot into the EFI shell. Guest installation— Introduction

This guide describes how to set up a `Ubuntu` guest in the *acontis Hypervisor*. It is assumed, the steps listed in the *Hypervisor Quick Start Guide* have been successfully executed.

The last chapter describes how to set up an *additional* `Ubuntu` guest, if 2 (or *more*) `Ubuntu` guests are desired.

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**Hint:** This guide uses `ubuntu-22.04-desktop-amd64.iso` as `Ubuntu` guest. The same should be achieved with a newer or older version of `Ubuntu`.

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## 1 Create folder for running the VM

In the first step, you have to create a folder where the VM shall be stored. The template folder has to be copied into a new VM specific folder, we will use the folder name `vm1` in this example.

```
$ cd /hv/VMs  
$ cp -R vm_template vm1
```

## 2 Copy Ubuntu ISO installation media to Linux

In a first step, we need to copy the Ubuntu installation media (ISO file) from a Windows (or Linux) host system into the Hypervisor filesystem.

### 2.1 Using Filezilla (recommended)

- Open a shell (right click on desktop and select *'Open Terminal here'* or press CTRL + ALT + T) on the Hypervisor Host.
- Detect IP address (with `ifconfig` command and through `inet` entry):

```
rte@RTV-TP104:~$ ifconfig
enp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.17.10.5 netmask 255.255.0.0 broadcast 172.17.255.255
    inet6 fe80::ccbb:85f1:38d3:fa2a prefixlen 64 scopeid 0x20<link>
    ether 90:1b:0e:18:c9:83 txqueuelen 1000 (Ethernet)
    RX packets 4618420 bytes 4033770375 (4.0 GB)
    RX errors 0 dropped 8865 overruns 0 frame 0
    TX packets 1460482 bytes 96608727 (96.6 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 6864 bytes 427092 (427.0 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 6864 bytes 427092 (427.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vnet0: flags=99<UP,BROADCAST,NOTRAILERS,RUNNING> mtu 1500
    inet 192.168.157.1 netmask 255.255.255.0 broadcast 192.168.157.
↵255
    ether 00:60:c8:00:00:00 txqueuelen 1000 (Ethernet)
    RX packets 765775 bytes 74216258 (74.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 767935 bytes 74780268 (74.7 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

In this *example* the 'detected' IP address is 172.17.10.5.

---

**Hint:** The device name `enp2s0` **differs** on different PC/IPC's!

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- Open Filezilla (get current version from <https://filezilla-project.org/>) and create new connection entry:

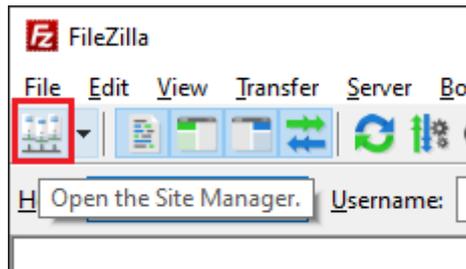


Fig. 2.1: Create new entry through site manager.

1. Push New site button
2. Give a qualified name
3. Select SFTP - SSH File Transfer Protocol
4. Give host IP/name. In screenshot above the last byte is X-ed out. Replace it with the 'detected' IP address.
5. Enter User name (same as at Hypervisor install)
6. Enter password (same as at Hypervisor install)
7. Push Connect button

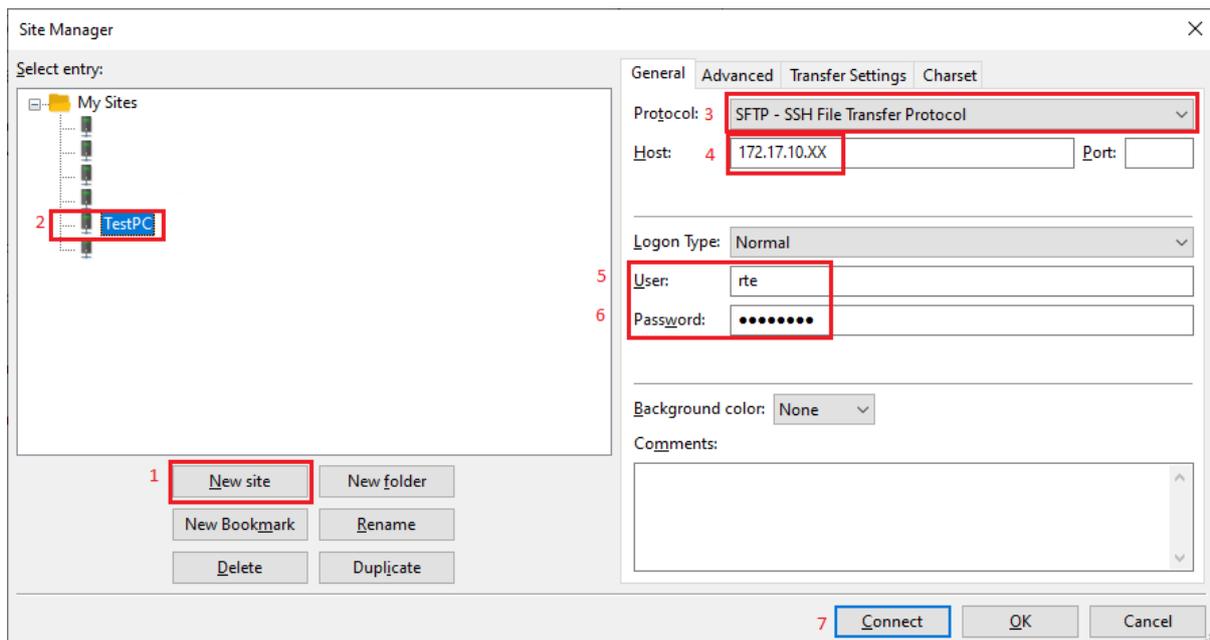


Fig. 2.2: Site manager dialog.

Select location of downloaded Ubuntu .iso image from *local* side and *drag'n'drop* it to `/hv/VMs/vm1` on *remote* side.

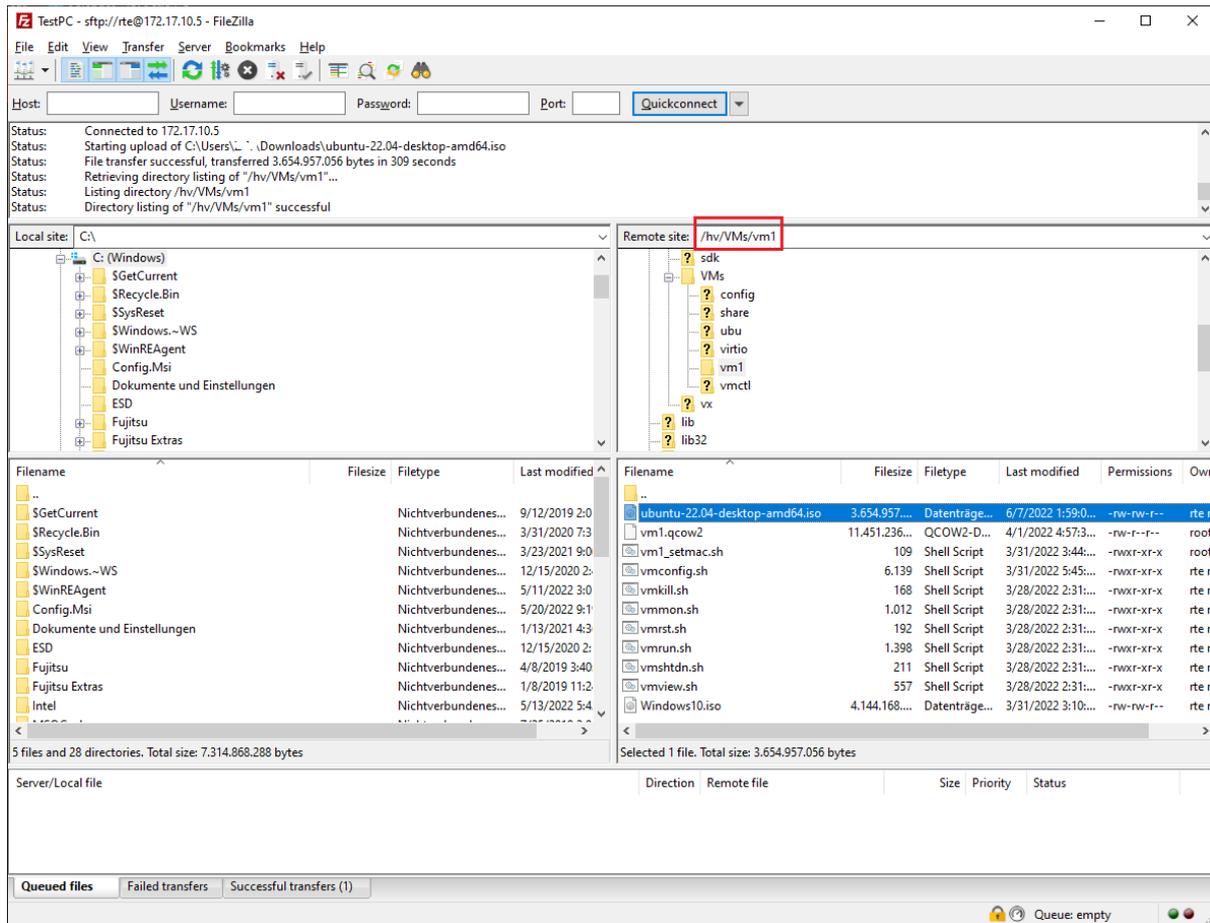


Fig. 2.3: Ubuntu location.

## 2.2 Using a Windows Share

Here we will show how this can be accomplished using a network share (//NameOrIpAddressOfPcWithShare/NameOfShare) in the Windows host system. We assume the network share has a directory /hv containing the file ubuntu-22.04-desktop-amd64.iso. We need to install the network client software (cifs) in the hypervisor and then mount the Windows network share.

```
$ sudo apt-get install cifs-utils
```

```
$ sudo mount -t cifs //NameOrIpAddressOfPcWithShare/NameOfShare /mnt -o  
↪ user=NameOfUserWithAccessToShare
```

Copy the Ubuntu ISO image to /hv/VMs/vm1.

```
$ cp /mnt/hv/ubuntu-22.04-desktop-amd64.iso  
↪ /hv/VMs/vm1/ubuntu-22.04-desktop-amd64.iso
```

The mount point /mnt isn't needed anymore and thus will be unmounted.

```
$ sudo umount /mnt
```

### 3 Guest Configuration

Prior to installing the guest, we need to configure the respective virtual machine (e.g. number of CPU cores, network settings etc.). The configuration file `vmconfig.sh` is located in the VM directory. The meaning of each configuration setting is explained in detail in this file. You need to edit this file and adjust according to your needs and environment.

The number of CPU cores must **not** exceed the number of physical cores available in the system and not assigned to Real-time guests. For example, if on a *quad core* CPU, you need 2 cores for Real-time guests, the number of cores for the Ubuntu guest must not exceed 2.

```
$ gedit /hv/VMs/vm1/vmconfig.sh
```

- Change `windows_guest=`

```
# unique identifier settings for this VM
export windows_guest=1 # set to 1 if the VM is a Windows guest
```

— to —

```
# unique identifier settings for this VM
export windows_guest=0 # set to 1 if the VM is a Windows guest
```

- Change `cdrom_iso=`

```
# If an ISO file shall be used instead of a physical CDROM, uncomment_
↳below
# command and replace the ISO name with the appropriate file name.
export cdrom_iso=/hv/VMs/vm1/Windows10.iso
```

— to —

```
# If an ISO file shall be used instead of a physical CDROM, uncomment_
↳below
# command and replace the ISO name with the appropriate file name.
export cdrom_iso=/hv/VMs/vm1/ubuntu-22.04-desktop-amd64.iso
```

- Change `ramsize=` and `hdspace=`

```
# Major VM settings
export ramsize=4096 # RAM size of the physical machine.
export hdspace=50G # Hard disk size.
# This value is only when creating a new hard_
↳disk image.
# After creating the disk image, this value_
↳is ignored.
```

— to —

```
# Major VM settings
export ramsize=2048 # RAM size of the physical machine.
export hdspace=25G # Hard disk size.
```

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```
↔disk image.           # This value is only when creating a new hard_
↔is ignored.           # After creating the disk image, this value_
```

- Adapt following line to your system and needs:

```
num_cpus=...
```

- By default, the network connection is set up automatically (using DHCP). Please check the hypervisor manual for other settings.

**Caution:** Automatic network setting will only work, if the Ethernet cable is connected!

## 4 Guest installation

After VM configuration you need to start the script `vmrun.sh` for the first time. The remote viewer will start and boot the guest.

```
$ cd /hv/VMs/vm1
$ sudo ./vmrun.sh
```

## 5 Ubuntu Installation

Follow the steps as usual for Ubuntu. In this guide the **default** cases are used where applicable.

- GRUB selection menu

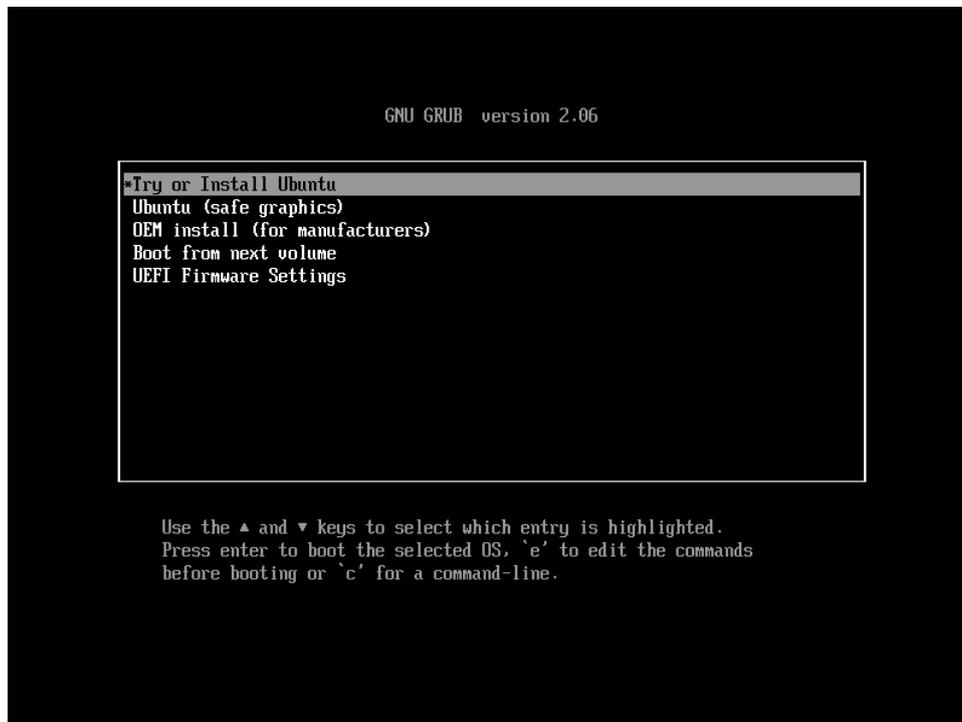


Fig. 5.1: Select Try or Install Ubuntu at GRUB selection menu.

- Select **Install Ubuntu**

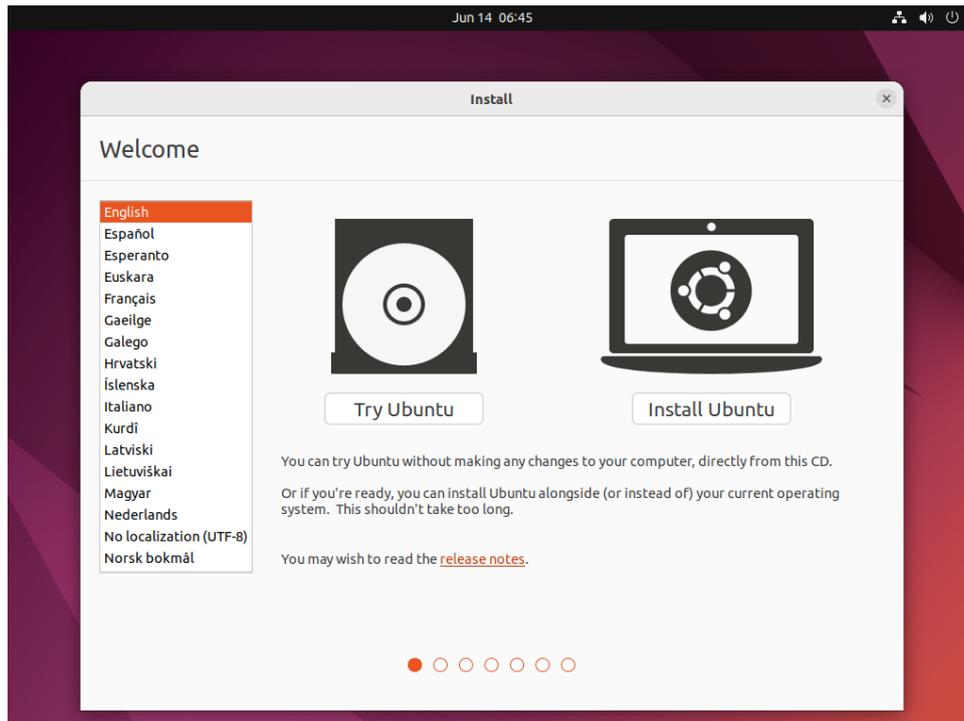


Fig. 5.2: Install Ubuntu select.

- Select your Keyboard layout → Continue

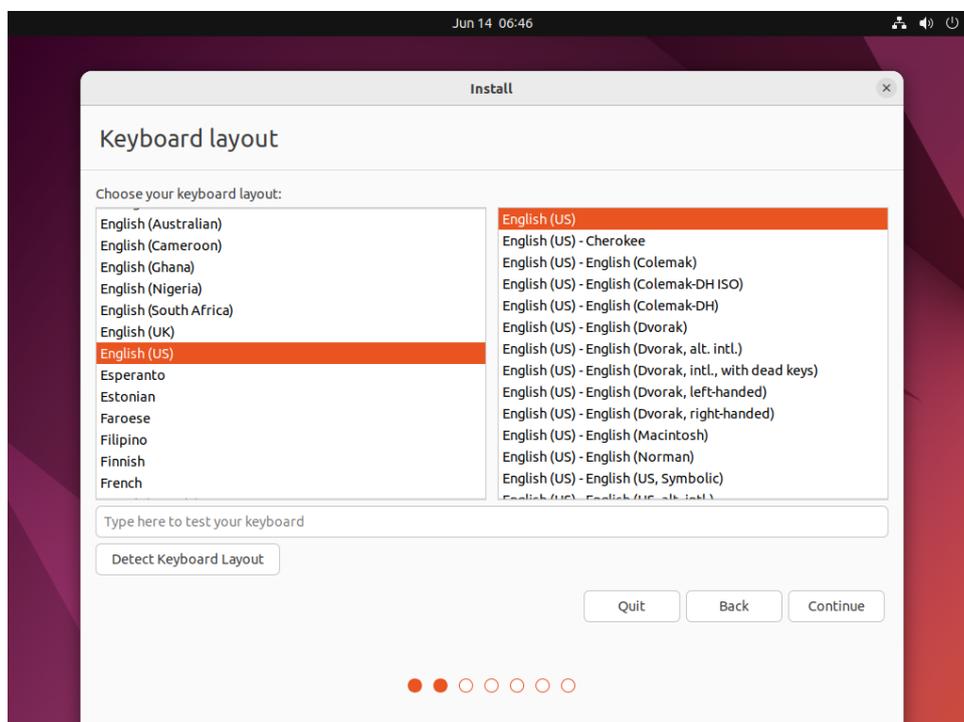


Fig. 5.3: Select keyboard layout.

- Updates and other software (default state) → Continue

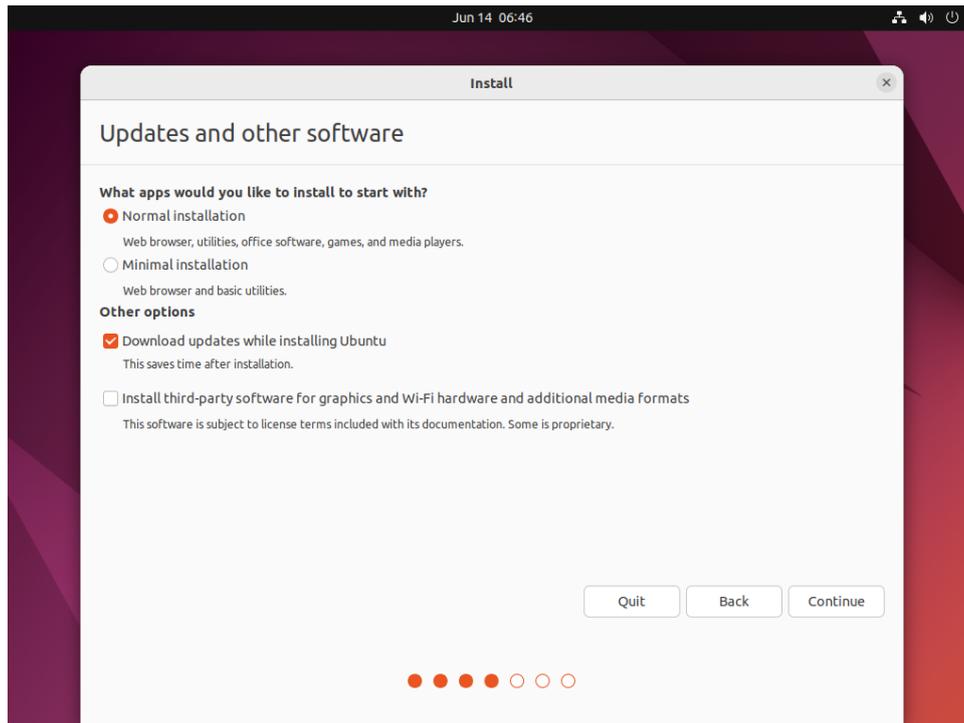


Fig. 5.4: Leave Updates and other software as default.

- Installation type → Erase disk and install Ubuntu → InstallNow

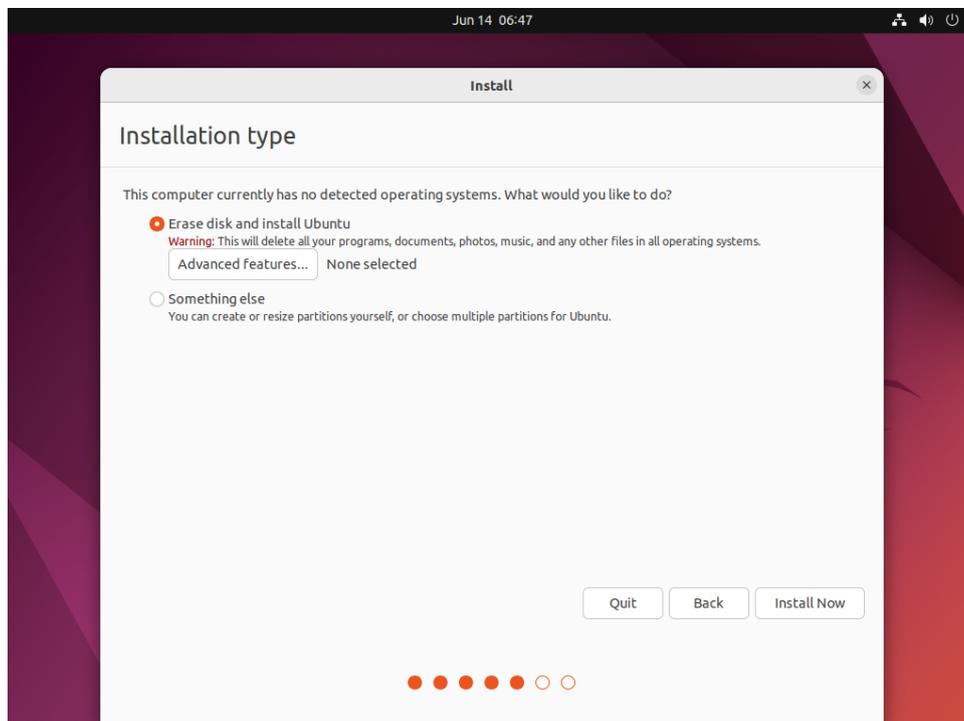


Fig. 5.5: Select Erase disk and install Ubuntu at installation type page.

- Confirm Write the changes to disks? dialog → Continue

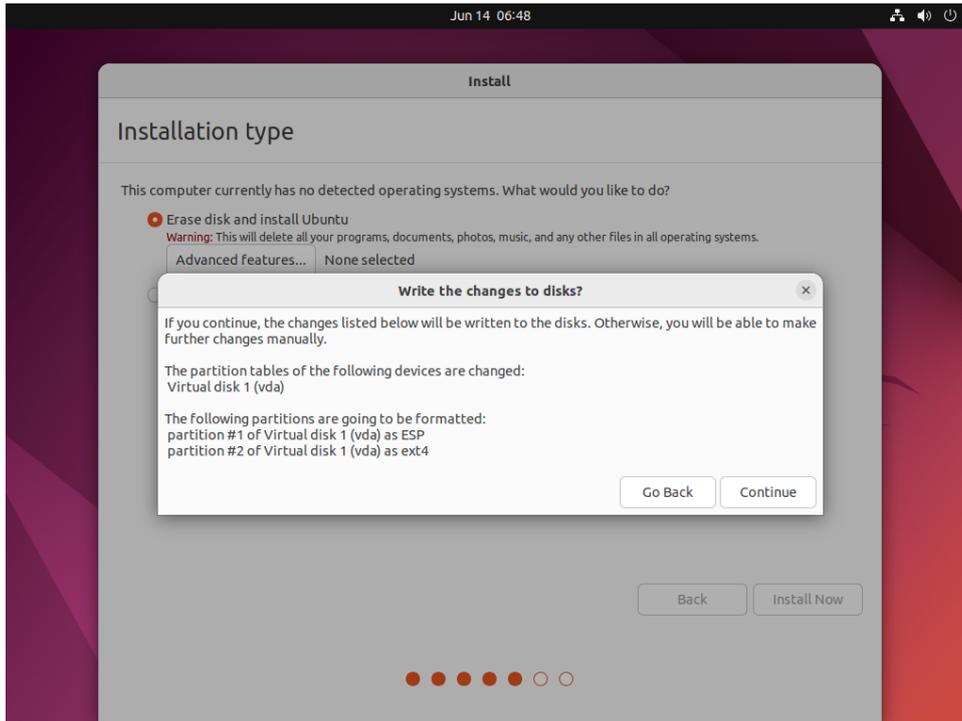


Fig. 5.6: Confirm Write the changes to disks? dialog.

- Where are you → Continue

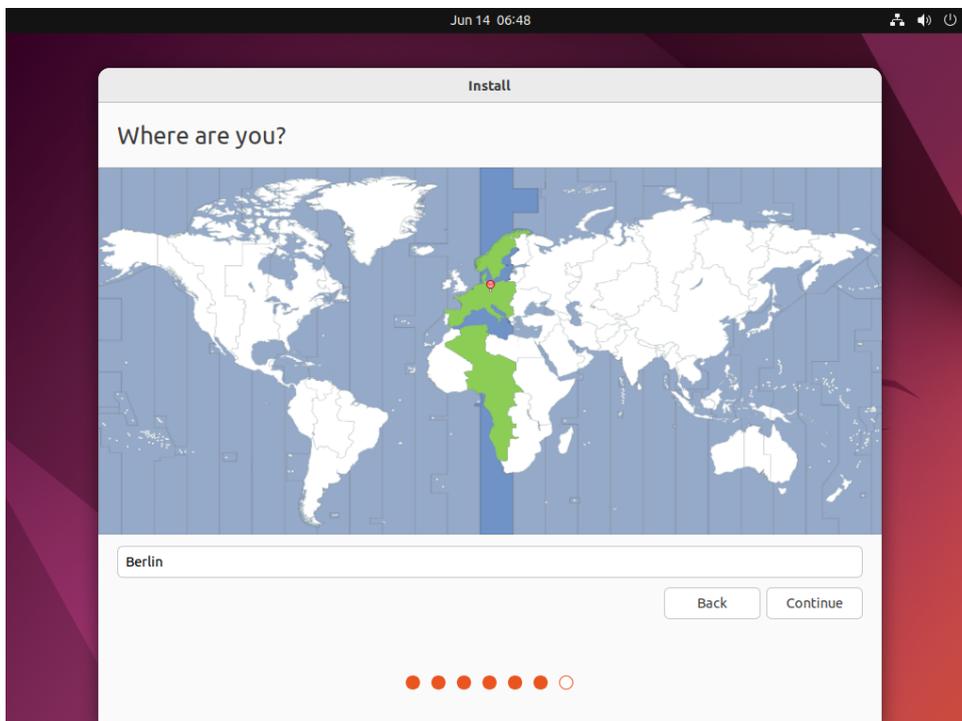


Fig. 5.7: Select where you are.

- Create credentials → Continue

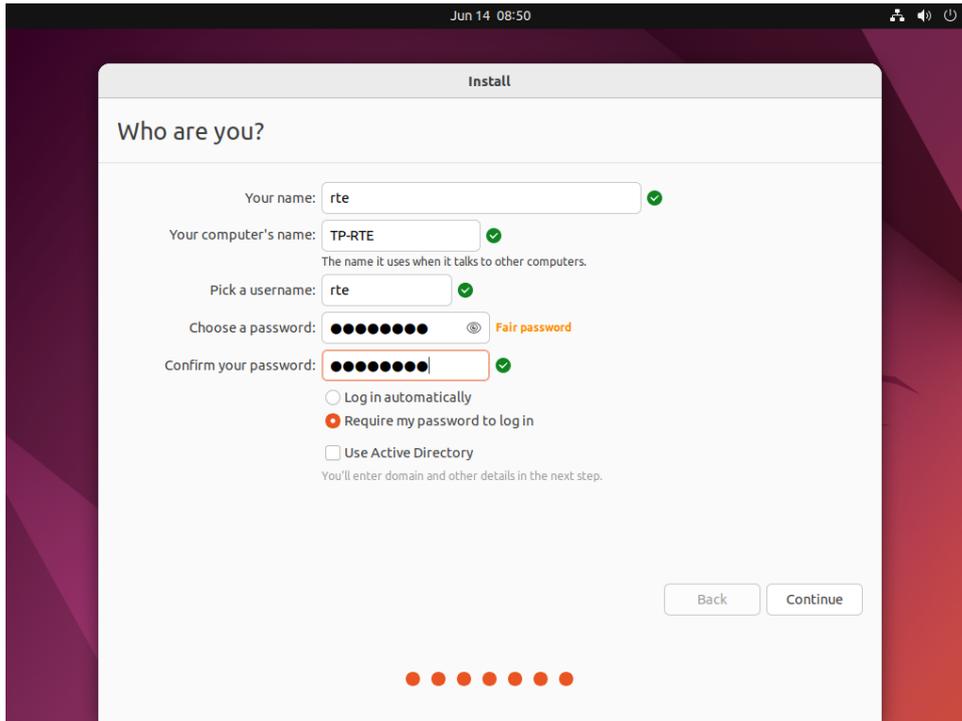


Fig. 5.8: Fill in the credentials.

---

**Hint:** In this guide the default user used is `rte`. It's recommended to supply a password.

---

- Restart → `RestartNow`

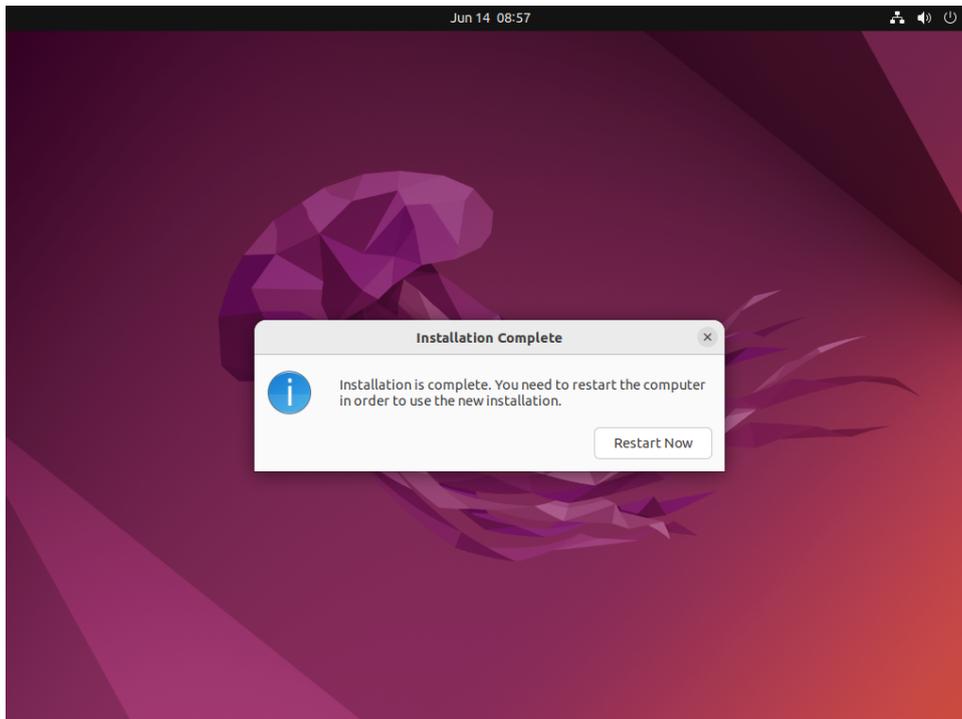


Fig. 5.9: Restart guest.

- Press enter -> ENTER

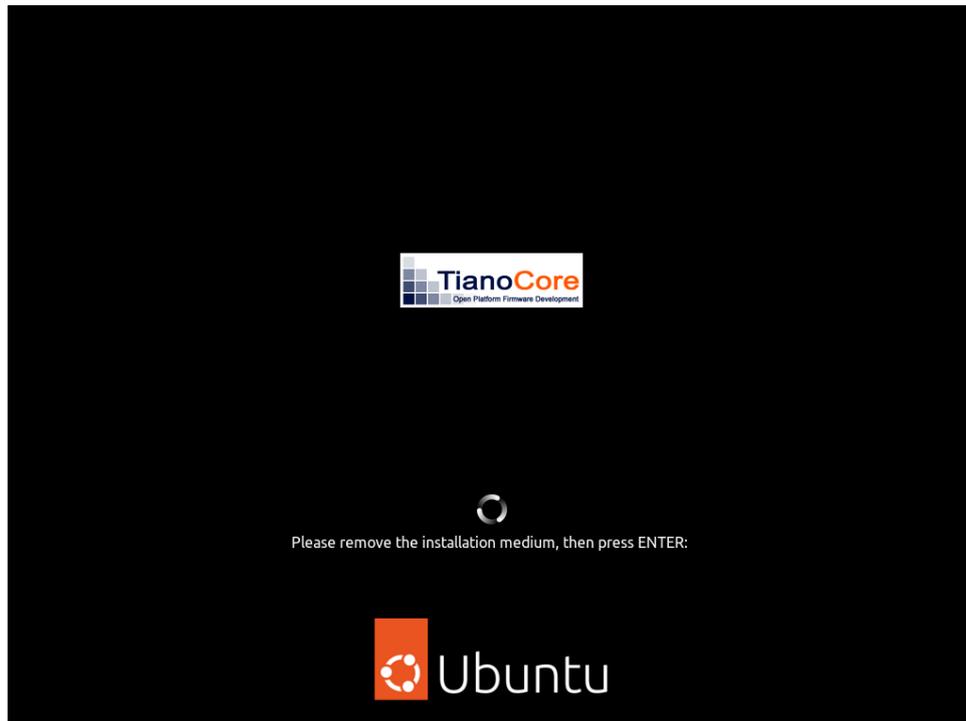


Fig. 5.10: Press ENTER.

- Login (in this example with user `rte` and the supplied password)

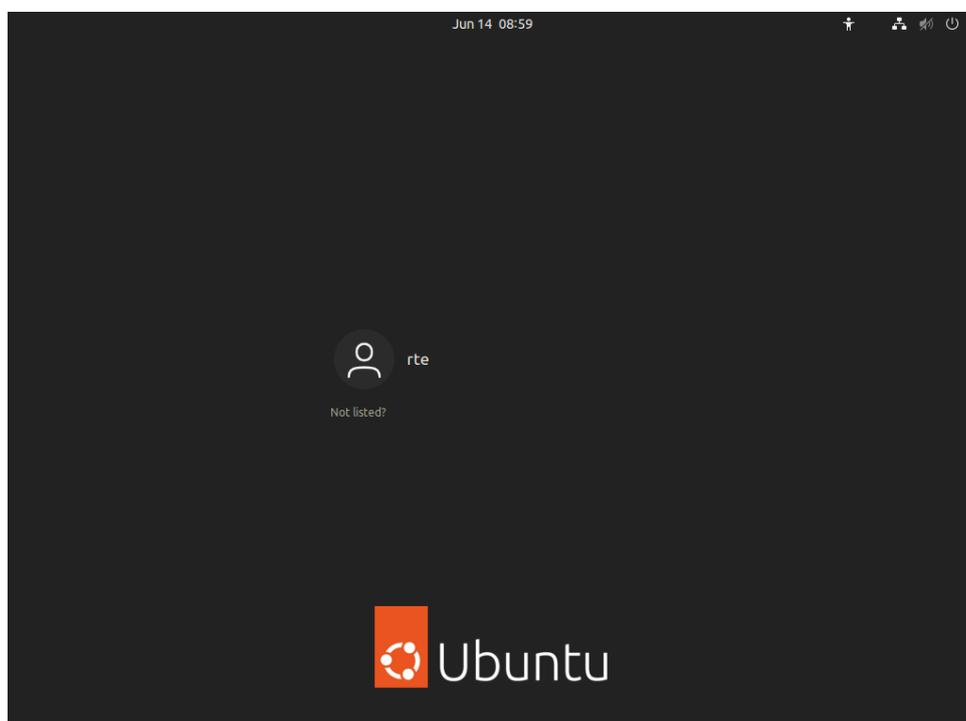


Fig. 5.11: Login into guest.

- OPTIONAL Update guest -> InstallNow

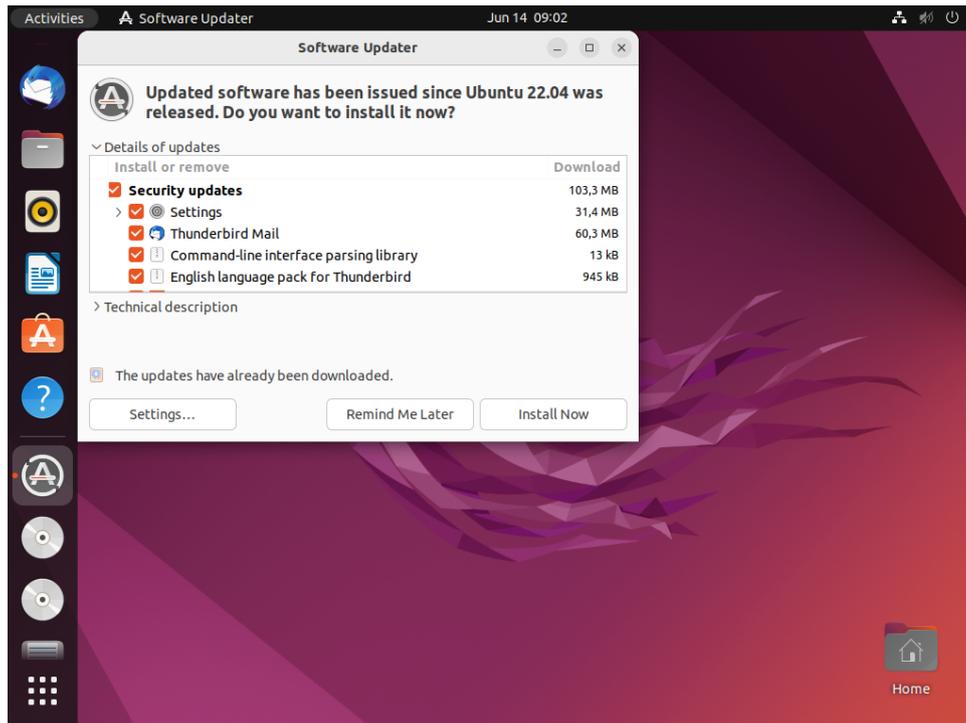


Fig. 5.12: Update guest.

- Installation finished!

## 6 Running Ubuntu guest

After successfully installing Ubuntu, you need to shutdown Ubuntu.

- Shutdown Ubuntu

---

**Important:** You need to shutdown the guest (do **NOT** reboot Ubuntu!). If this is **not** possible inside the guest, please **use** the `./vmshtdn.sh` script! If shutdown is **blocked**, you need to close the setup windows before (e.g. using tab keys to select the finish button).

---

- Adjust the file `vmconfig.sh` (to avoid booting the installation media again)

```
$ gedit /hv/VMs/vm1/vmconfig.sh
```

```
comment "cdrom_iso" with #
```

- Start the Ubuntu guest

```
$ ./vmrun.sh
```

---

**Hint:** Due to hardware changes, Ubuntu may automatically reboot once. Mouse and desktop may still not work properly. In this case, please install all of the latest Ubuntu updates.

---

## 7 Ubuntu and Real-time guest in parallel

In the final step, we will run Ubuntu and Real-Time Linux in parallel.

- **Shutdown** Ubuntu, do **NOT** reboot!
- **Run the Real-Time Linux guest**

```
$ cd /hv/lx  
$ sudo ./lx.sh  
$ ./dbgcon.sh
```

- **Open a second shell** (right click on desktop and select '*Open Terminal here*' or press CTRL + ALT + T)
- **Start the Ubuntu guest**

```
$ cd /hv/VMs/vm1  
$ ./vmrun.sh
```

- **Log into Real-Time Linux and run the *Real-time* demo:**

```
$ vmf64 login: root  
$ password: root  
$ RealtimeDemo
```

## 8 Add an additional Ubuntu guest [OPTIONAL]

To clone an existing VM, follow the same steps as described in the `Windows Guest Guide` tutorial.

As an *alternative* of cloning the installed Ubuntu image, it's also possible to use the `ubuntu.iso` install image again – like in the previous chapters – and install `vm2` freshly.

---

**Hint:** The *same* changes of *this* chapter applies **accordingly** for more Ubuntu guests (like `vm3`, `vm4`, etc).

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