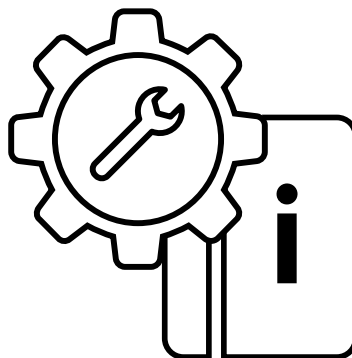


Installation Guide

LANCOM vFirewall



Copyright

© 2022 LANCOM Systems GmbH, Wuerselen (Germany). All rights reserved. While the information in this manual has been compiled with great care, it may not be deemed an assurance of product characteristics. LANCOM Systems shall be liable only to the degree specified in the terms of sale and delivery.

The reproduction and distribution of the documentation and software supplied with this product and the use of its contents is subject to written authorization from LANCOM Systems. We reserve the right to make any alterations that arise as the result of technical development.

Windows® and Microsoft® are registered trademarks of Microsoft, Corp. LANCOM, LANCOM Systems, LCOS, LANcommunity and Hyper Integration are registered trademarks. All other names or descriptions used may be trademarks or registered trademarks of their owners. This document contains statements relating to future products and their attributes. LANCOM Systems reserves the right to change these without notice. No liability for technical errors and/or omissions.

Products from LANCOM Systems include software developed by the "OpenSSL Project" for use in the "OpenSSL Toolkit" (www.openssl.org).

Products from LANCOM Systems include cryptographic software written by Eric Young (eay@cryptsoft.com).

Products from LANCOM Systems include software developed by the NetBSD Foundation, Inc. and its contributors.

Products from LANCOM Systems contain the LZMA SDK developed by Igor Pavlov.

This product contains separate open-source software components.

These are subject to their own licenses, in particular the General Public License (GPL). If the respective license demands, the source files for the corresponding software components will be made available on request.

Please contact us via e-mail under gpl@lancom.de.

LANCOM Systems GmbH
Adenauerstr. 20/B2
52146 Wuerselen
Germany

www.lancom-systems.com
Wuerselen, November 2022

Introduction

Thank you for purchasing a LANCOM vFirewall.

The LANCOM vFirewall is a software-based Unified Threat Management (UTM) firewall, which is operated on a virtual machine. And yet, it offers the same functionality as a real, appliance-based LANCOM R&S®Unified Firewall. This installation guide describes the setup of the LANCOM vFirewall under VMware ESXi-Server, Oracle Virtual Box, and Microsoft Hyper-V Server.

Installation of the LANCOM vFirewall on a VMware ESXi server

Below, the prerequisites and single steps for a successful installation of the LANCOM vFirewall on a VMware ESXi server are described.

vFirewall files

To get the ISO file for installation please contact us via sales@lancom.de or by telephone at +49 2405 49936 122

Prerequisites

The following prerequisites are mandatory for a successful installation of the LANCOM vFirewall on a VMware ESXi server:

- The LANCOM vFirewall software has to be available as an ISO image file
- The VMware ESXi version ESXi 6.0.0 (VM version 11) or higher has to be installed on a server with an Intel processor.

The virtual machine has to meet the following minimum requirements:

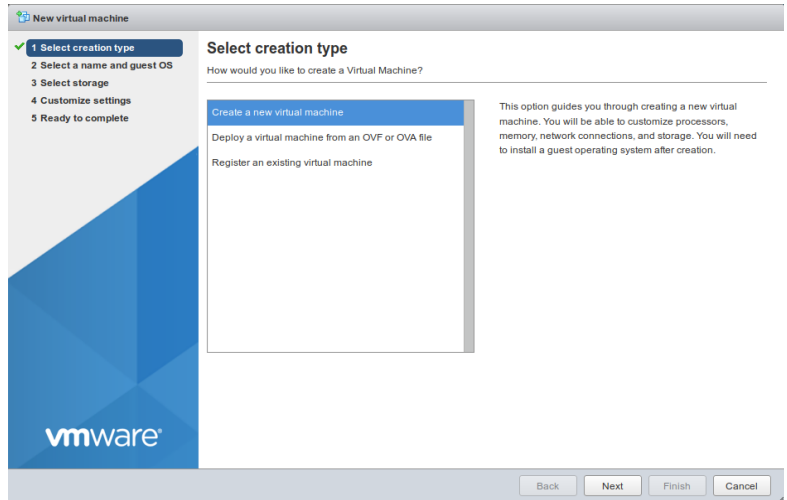
- 1 x86 CPU (64 bit) processor
- 4 GB RAM
- 30 GB free harddisk space
- 2 network interfaces

Creating and configuring the LANCOM vFirewall on a VMware ESXi server

Below, the necessary steps are described to put the LANCOM vFirewall into operation on a VMware ESXi server.

Start VMware ESXi, login and create a new virtual machine.

→ Select creation type - Create a new virtual machine



Create a name for the virtual machine

→ Select a name and guest OS

The screenshot shows the 'New virtual machine - Unified Firewall (ESXi 6.0 virtual machine)' wizard. On the left, a progress bar indicates the steps: 1. Select creation type (completed), 2. Select a name and guest OS (current step), 3. Select storage, 4. Customize settings, and 5. Ready to complete. The main area is titled 'Select a name and guest OS' and includes a sub-header 'Specify a unique name and OS'. A text box for 'Name' contains 'Unified Firewall'. Below this, a note states: 'Virtual machine names can contain up to 80 characters and they must be unique within each ESXi instance.' A paragraph explains that identifying the guest operating system allows the wizard to provide appropriate defaults. Three dropdown menus are shown: 'Compatibility' set to 'ESXi 6.0 virtual machine', 'Guest OS family' set to 'Linux', and 'Guest OS version' set to 'Debian GNU/Linux 8 (64-bit)'. At the bottom right, there are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'.

In the shown example, the name “Unified Firewall” has been chosen.

Further, please configure

- Compatibility: ESXi 6.0 virtual machine
- Guest OS family: Linux
- Guest OS version: Debian Linux 8 (64 bit)

Select the storage location for the virtual machine

→ Select storage

New virtual machine - Unified Firewall (ESXi 6.0 virtual machine)

- ✓ 1 Select creation type
- ✓ 2 Select a name and guest OS
- ✓ 3 Select storage
- 4 Customize settings
- 5 Ready to complete

Select storage

Select the datastore in which to store the configuration and disk files.

The following datastores are accessible from the destination resource that you selected. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.

| Name | Capacity | Free | Type | Thin pro... | Access |
|--------|-----------|-----------|-------|-------------|--------|
| BAREOS | 10.83 TB | 2.75 TB | NFS | Supported | Single |
| DATA | 5.46 TB | 1.12 TB | VMFS5 | Supported | Single |
| OS | 110.75 GB | 109.34 GB | VMFS6 | Supported | Single |

3 items

Back Next Finish Cancel

Modify your settings

→ Customize settings

New virtual machine - Unified Firewall (ESXi 6.0 virtual machine)

- ✓ 1 Select creation type
- ✓ 2 Select a name and guest OS
- ✓ 3 Select storage
- ✓ 4 Customize settings
- 5 Ready to complete

Customize settings

Configure the virtual machine hardware and virtual machine additional options

Virtual Hardware VM Options

Add hard disk Add network adapter Add other device

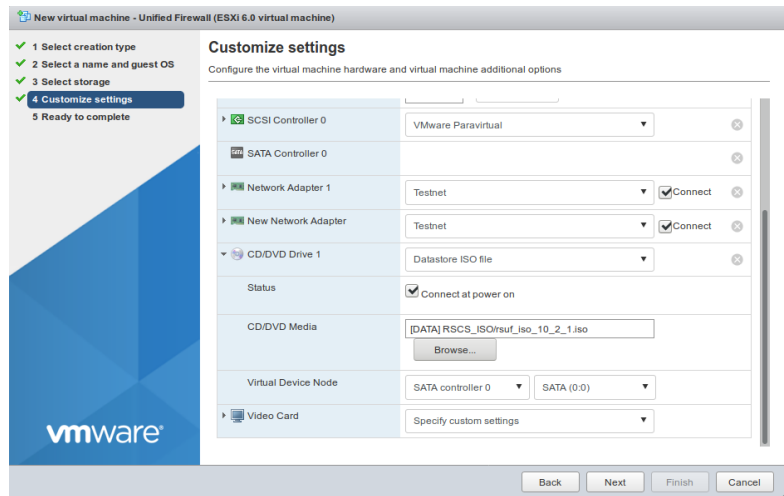
| | | |
|-------------------|---|-------------------|
| CPU | 1 | |
| Memory | 4096 | MB |
| Hard disk 1 | 32 | GB |
| SCSI Controller 0 | Vmware Paravirtual | |
| SATA Controller 0 | | |
| Network Adapter 1 | Testnet | |
| Status | <input checked="" type="checkbox"/> Connect at power on | |
| Adapter Type | VMXNET 3 | |
| MAC Address | Automatic | 00:00:00:00:00:00 |

Back Next Finish Cancel

Configure as follows:

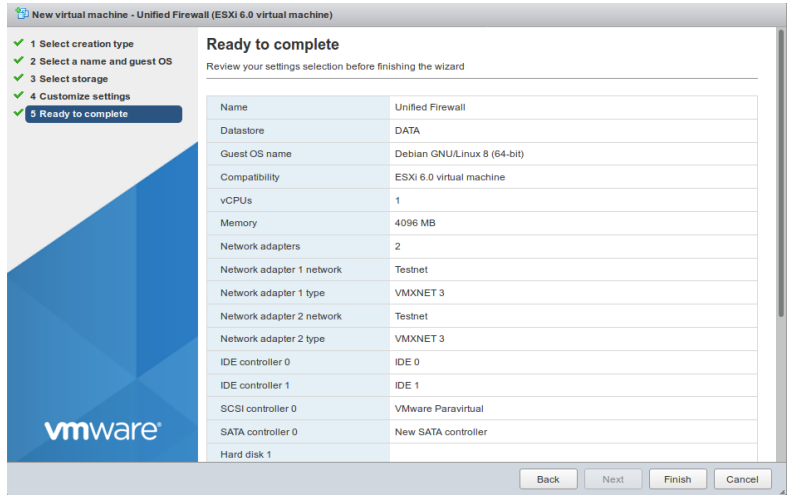
- CPU: at least 1
- Memory: at least 4096 MB
- Hard disk 1: at least 32 GB
- Adapter type: **VMXNET 3**

Select the ISO image file via the “Browse” button.



Check your configuration.

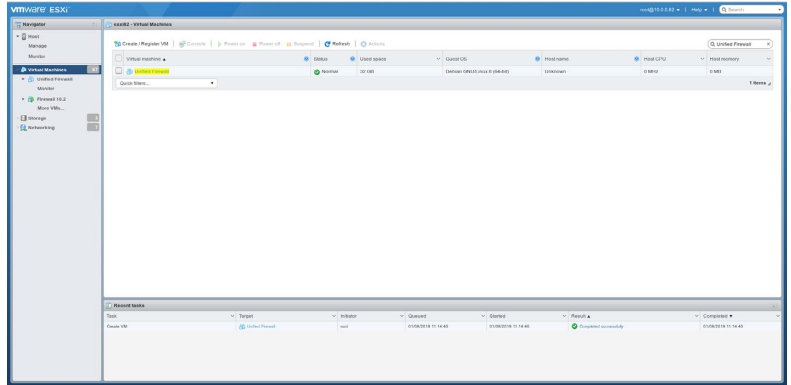
→ Ready to complete



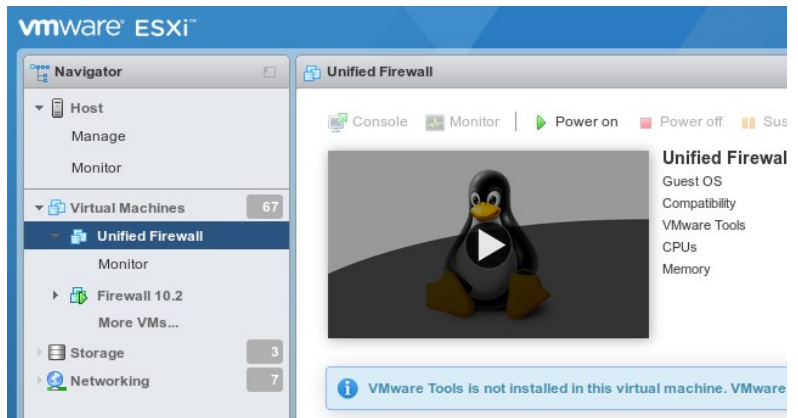
Confirm the checked configuration using the “Finish” button. Afterwards you can see your created virtual machine.

Starting the LANCOM vFirewall on a VMware ESXi server

Enter the name of the virtual machine in the search field, e.g. “Unified Firewall”.

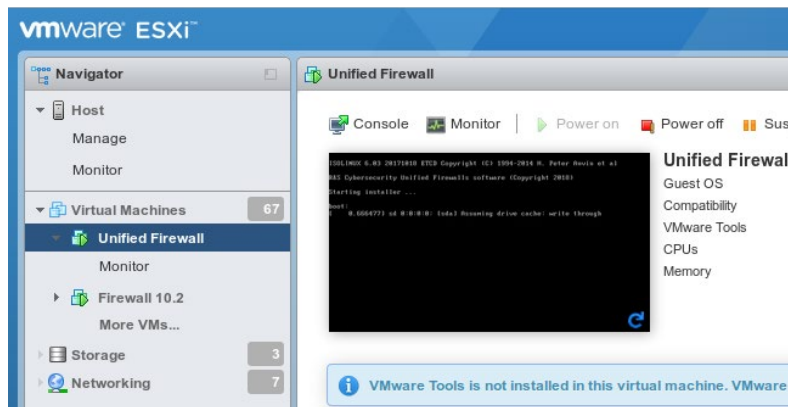


After selecting “Unified Firewall” you will see the following overview:



Select “Power on” in the upper menu bar.

Select “Console” in the upper menu bar, and in the following window “Open browser console”.



The further configuration of the LANCOM vFirewall via console is described in the chapter „Final installation of the LANCOM vFirewall on the console“ on page 39.

The installation of the LANCOM vFirewall under Oracle VirtualBox

Below, the prerequisites and single steps for a successful installation of the LANCOM vFirewall under Oracle VirtualBox are described.

vFirewall files

To get the ISO file for installation please contact us via sales@lancom.de or by telephone at +49 2405 49936 122

Prerequisites

The following prerequisites are mandatory for a successful installation of the LANCOM vFirewall in the Oracle VM VirtualBox Manager:

- The LANCOM vFirewall software has to be available as an ISO image file
- Oracle VM VirtualBox Manager 5.0 or higher has to be installed on a server with an Intel processor.

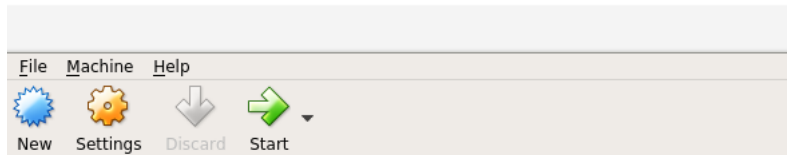
The virtual machine has to meet the following minimum requirements:

- 1 x86 CPU (64 bit) processor
- 4 GB RAM
- 30 GB free hard disk space
- 2 network interfaces

Creating and configuring the LANCOM vFirewall in the Oracle VirtualBox Manager

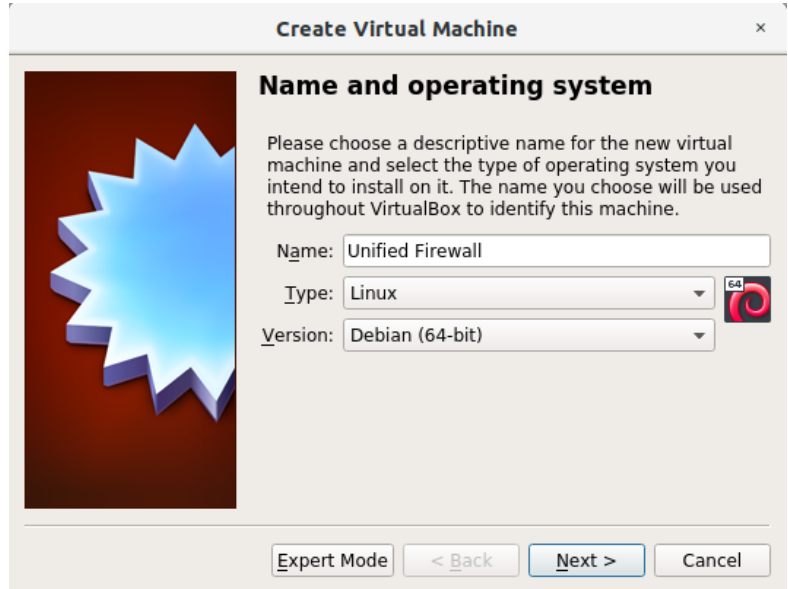
Below, the necessary steps are described to put the LANCOM vFirewall into operation in the Oracle Virtual Box Manager.

Start the Oracle VM Virtual Box Manager and select the “New” button in the upper menu bar to create a new virtual machine.



In the upcoming window "Name and operating system" allocate a name for the virtual machine.

In the shown example, the name "Unified Firewall" has been chosen.



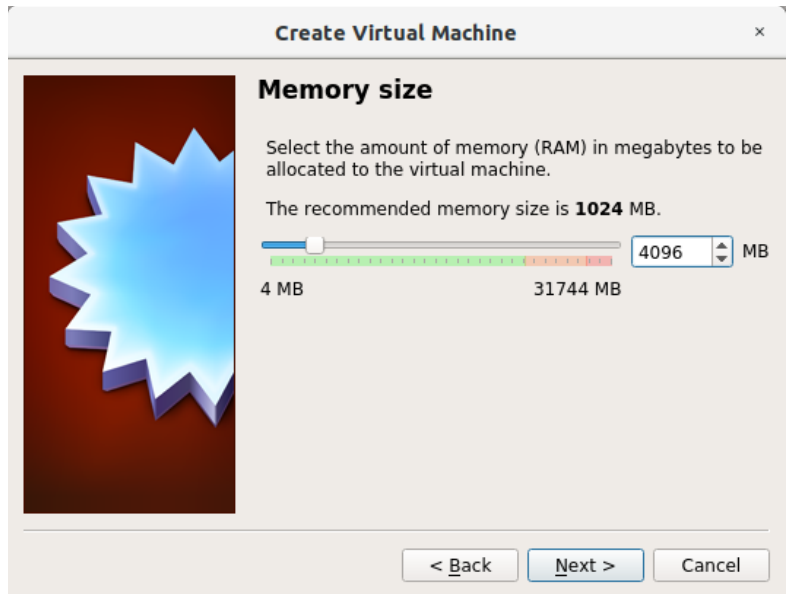
Further, please configure:

→ Type: Linux

→ Version: Debian (64-bit)

Click on "Next".

In the window "Memory size" you configure the allocated memory for the virtual machine.



Select 4096 MB as a minimum for full UTM and confirm with "Next".

In the window "Hard disk" you configure the virtual harddisk.



Select "Create a virtual hard disk now" and confirm with "Create".

In the next step “Hard disk file type” you define the file type of the virtual harddisk.



Select “VDI (Virtual Box Disk Image)” and confirm with “Next”.

In the next window "Storage on physical hard disk" you select the option to allocate memory for the virtual harddisk dynamically.



Select "Dynamically allocated" and confirm with "Next".

In the next step "File location and size" you configure the name of the virtual harddisk, its storage location, and its minimum size.



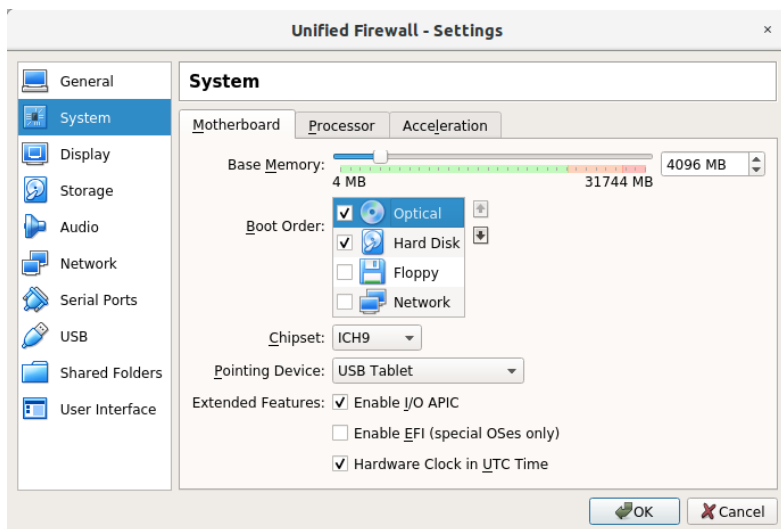
Select a minimum size of 32 GB and proceed with "Create".

Now, the entry for your previously created virtual machine appears in the main window of the Oracle VM Virtual Box Manager.

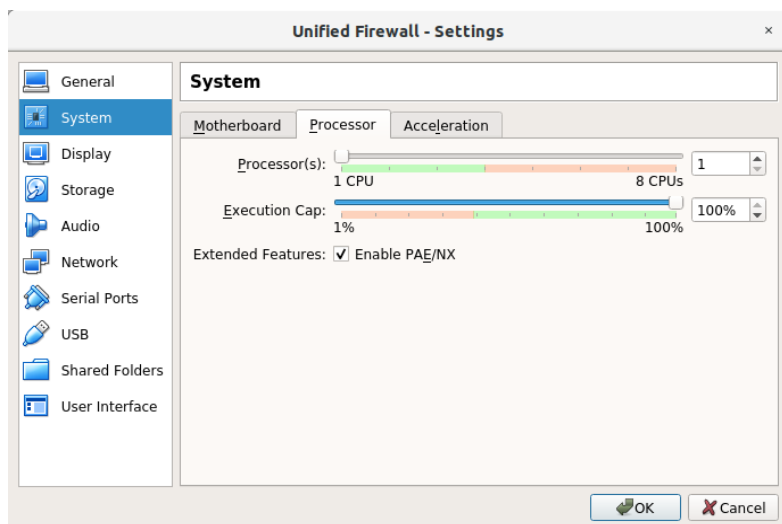
Select the virtual machine by a single click and choose “Settings” in the upper menu bar.



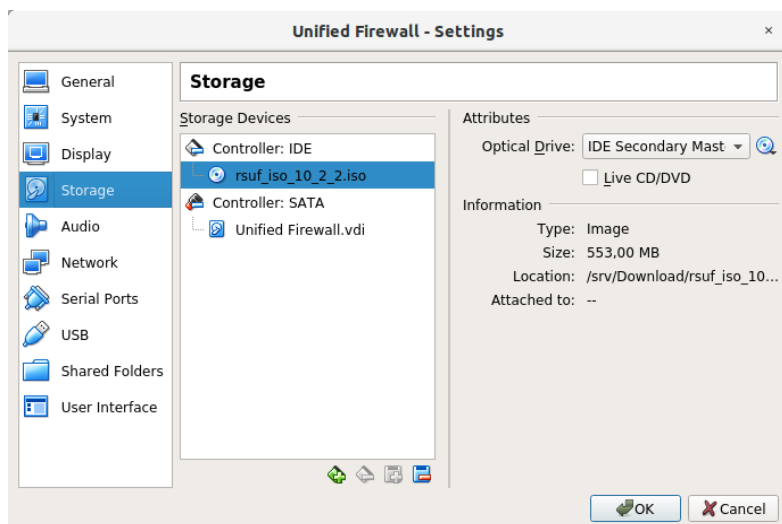
In the “System” section, check the settings on the tab “Motherboard”, and adjust them according to the following screenshot.



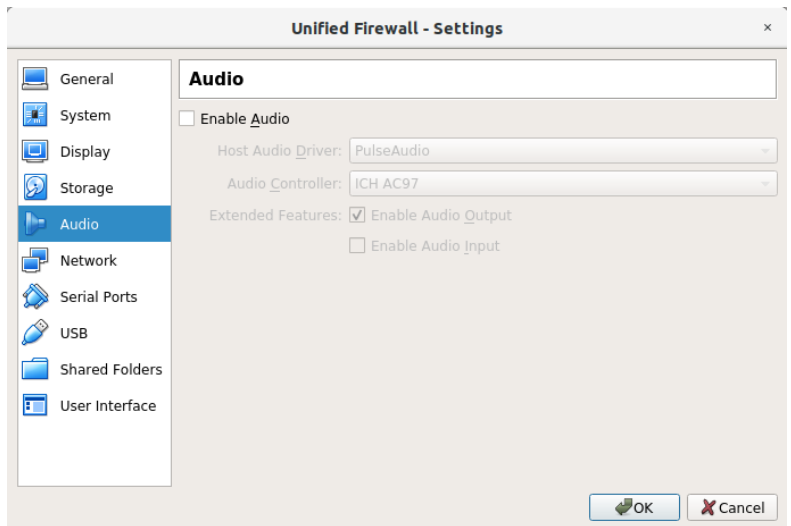
Activate the option “Enable PAE/NX” on the tab “Processor”.



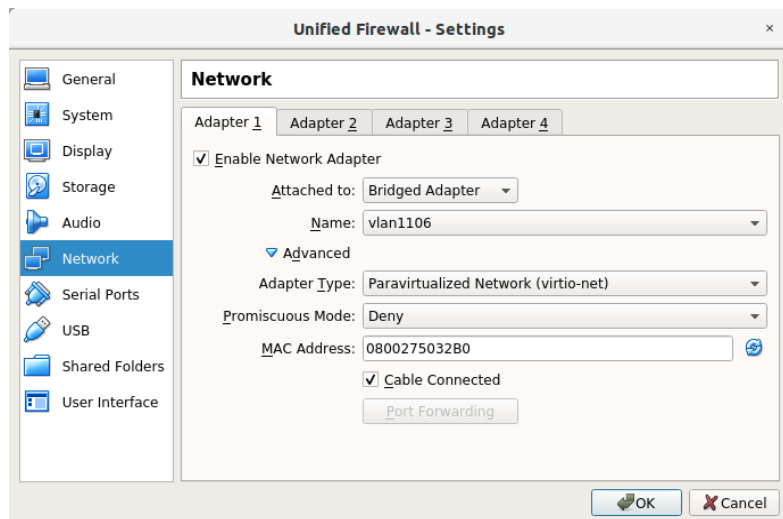
Select “Storage” from the left menu bar and click on the disc icon under “Attributes” to select “Virtual optical disk file”.



In the menu "Audio", untag "Enable Audio".



In the menu “network”, select “Enable Network Adapter” and configure as shown:

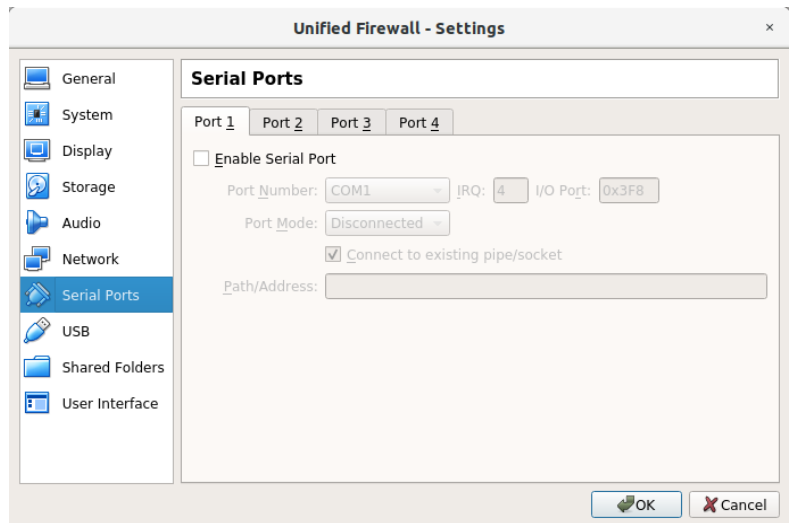


- Attached to: user specific, e.g. “Bridged Adapter”
- Name: user specific; if “Bridged Adapter” has been selected, please choose the appropriate interface.
- Adapter Type: Paravirtualized Network (virtio-net)
- Promiscuous Mode: Deny
- Cable Connected: enabled

The MAC address is automatically determined and filled in.

In the tab “Adapter 2” choose a name different from adapter 1 for “Attached to”. The remaining entries are configured identically.

In the menu "Serial Ports", disable any serial interfaces.

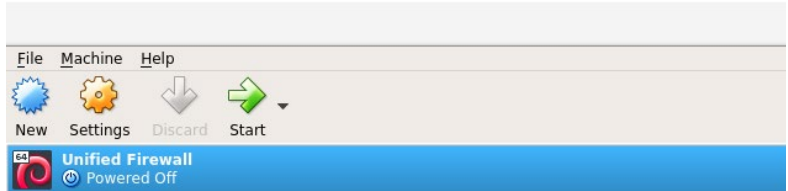


In the menus "USB", "Shared Folders", and "User Interface" confirm the preselected default values.

Select "OK" to apply the modified settings.

Start of the LANCOM vFirewall in the Oracle VirtualBox Manager

Start your virtual machine in the Oracle VM Virtual Box Manager by selecting the green "Start" arrow icon.



The further configuration of the LANCOM vFirewall via console is described in the chapter „Final installation of the LANCOM vFirewall on the console“ on page 39.

Installation of the LANCOM vFirewall in Microsoft Hyper-V

Below, the prerequisites and single steps for a successful installation of the LANCOM vFirewall in Microsoft Hyper-V are described.

vFirewall files

To get the ISO file for installation please contact us via sales@lancom.de or by telephone at +49 2405 49936 122

Prerequisites

The following prerequisites are mandatory for a successful installation of the LANCOM vFirewall under Microsoft Hyper-V:

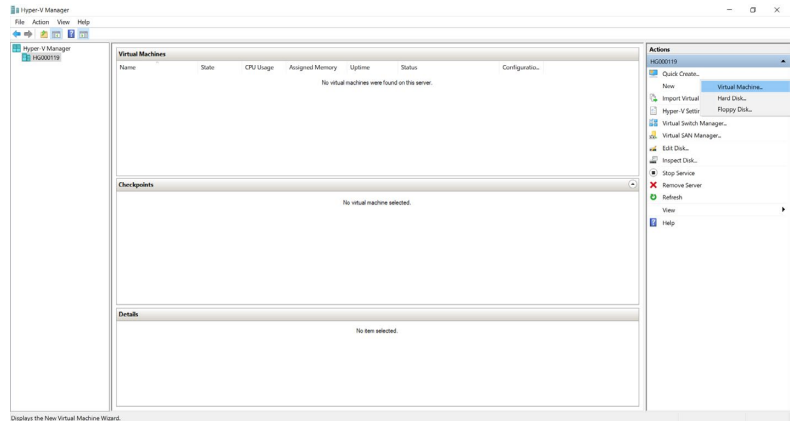
- The LANCOM vFirewall software has to be available as an ISO image file.
- Microsoft Hyper-V Manager 10.0 or higher has to be installed on a server with Intel processor.

The virtual machine has to meet the following minimum requirements:

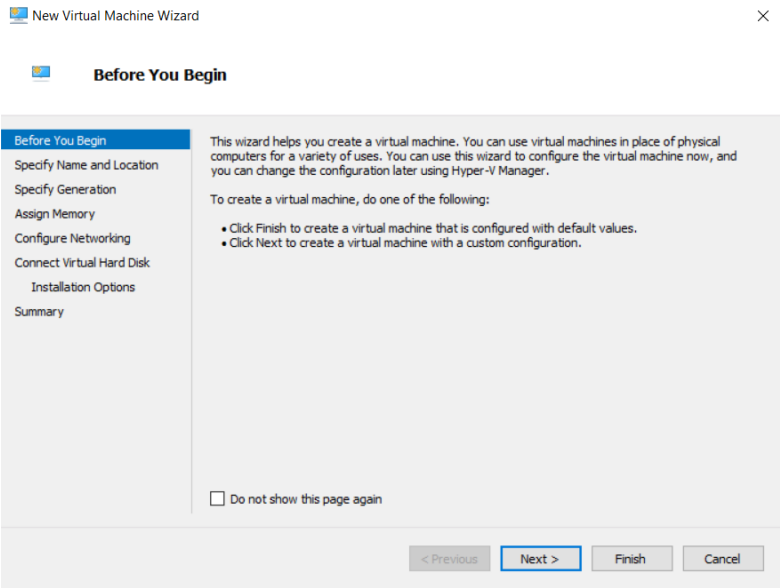
- 1 x86 CPU (64 bit) processor
- 4 GB RAM
- 30 GB free harddisk space
- 2 network interfaces

Creating and configuring the LANCOM vFirewall in the Microsoft Hyper-V Manager

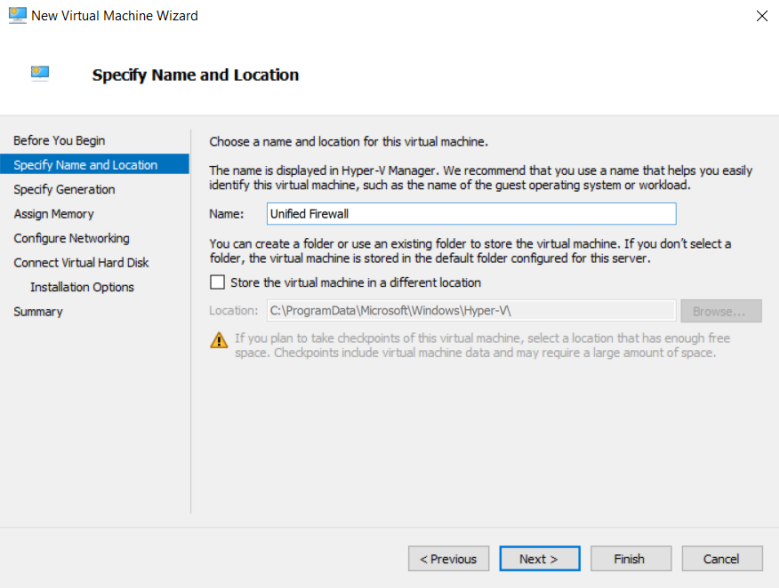
Start the Microsoft Hyper-V Manager. On the right side of the screen in the “Actions” area, first select “New”, then “Virtual Machine”.



The “New Virtual Machine Wizard” is started. A new window “Before you begin” opens.



Click on "Next" and choose a name for the virtual machine, e.g. "Unified Firewall". Confirm with "Next".



In the next step, select "Generation 1" and confirm with "Next".

New Virtual Machine Wizard

×



Specify Generation

Before You Begin

Specify Name and Location

Specify Generation

Assign Memory

Configure Networking

Connect Virtual Hard Disk

Installation Options

Summary


Choose the generation of this virtual machine.

☒ Generation 1

This virtual machine generation supports 32-bit and 64-bit guest operating systems and provides virtual hardware which has been available in all previous versions of Hyper-V.

☐ Generation 2

This virtual machine generation provides support for newer virtualization features, has UEFI-based firmware, and requires a supported 64-bit guest operating system.

 Once a virtual machine has been created, you cannot change its generation.

[More about virtual machine generation support](#)

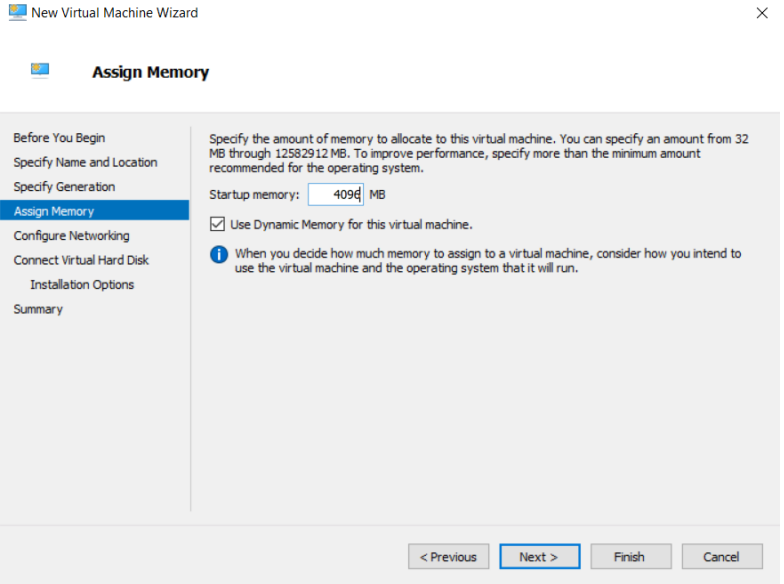
< Previous

Next >

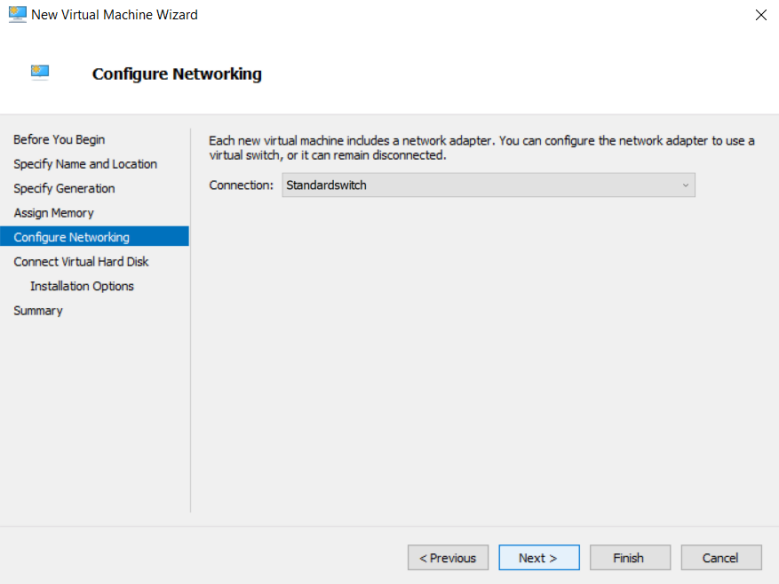
Finish

Cancel

In the window “Assign Memory”, specify a value of at least 4096 MB as “Startup memory”, and activate “Use Dynamic Memory for this virtual machine”. Confirm with “Next”.



In the next step “Configure Networking”, specify the value “Standardswitch” for “Connection”. Confirm with “Next”.



Under “Connect Virtual Hard Disk”, select the option “Create a virtual hard disk” and a size of 32 GB. Confirm with “Next”.

New Virtual Machine Wizard

×

Connect Virtual Hard Disk

Before You Begin
Specify Name and Location
Specify Generation
Assign Memory
Configure Networking
Connect Virtual Hard Disk
Installation Options
Summary

A virtual machine requires storage so that you can install an operating system. You can specify the storage now or configure it later by modifying the virtual machine's properties.

☒ **Create a virtual hard disk**
Use this option to create a VHDx dynamically expanding virtual hard disk.

Name:

Location:

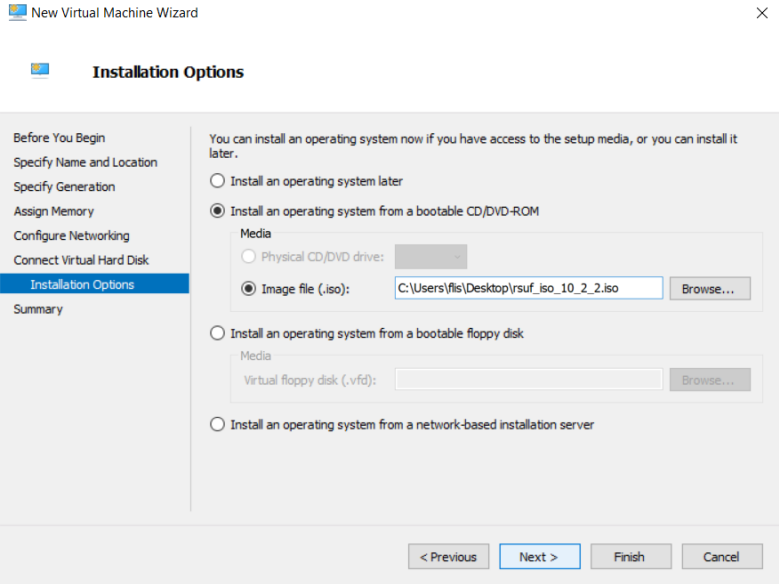
Size: GB (Maximum: 64 TB)

☐ **Use an existing virtual hard disk**
Use this option to attach an existing virtual hard disk, either VHD or VHDx format.

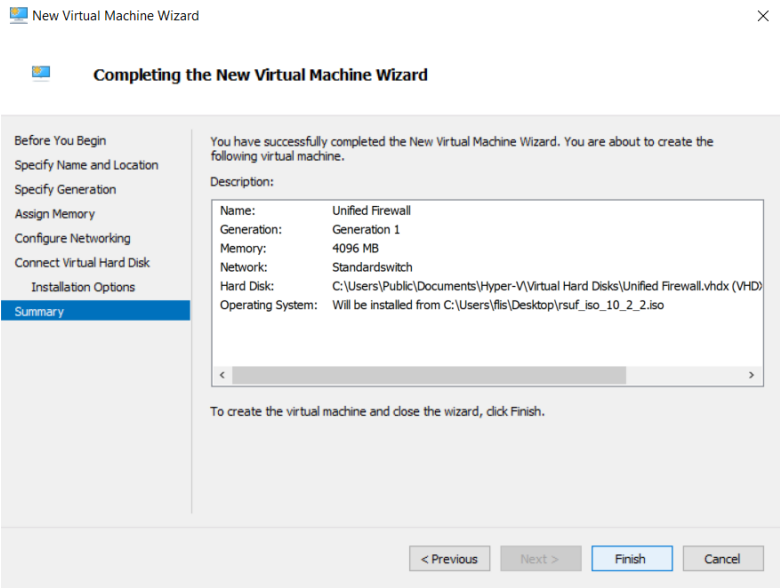
Location:

☐ **Attach a virtual hard disk later**
Use this option to skip this step now and attach an existing virtual hard disk later.

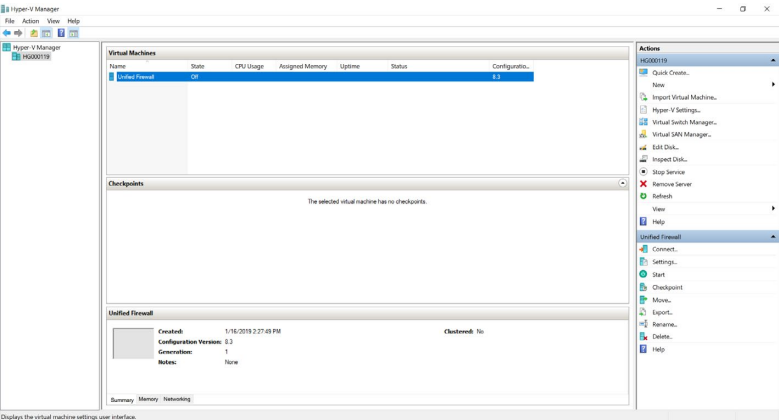
In the window "Installation Options", activate the option "Install an operating system from a bootable CD/DVD-ROM" as well as the option "Image file (.iso)". Select or confirm the path to the vFirewall image file and confirm with "Next".



The final page completes the wizard by displaying an overview of the so far configured parameters. Confirm with “Finish”.

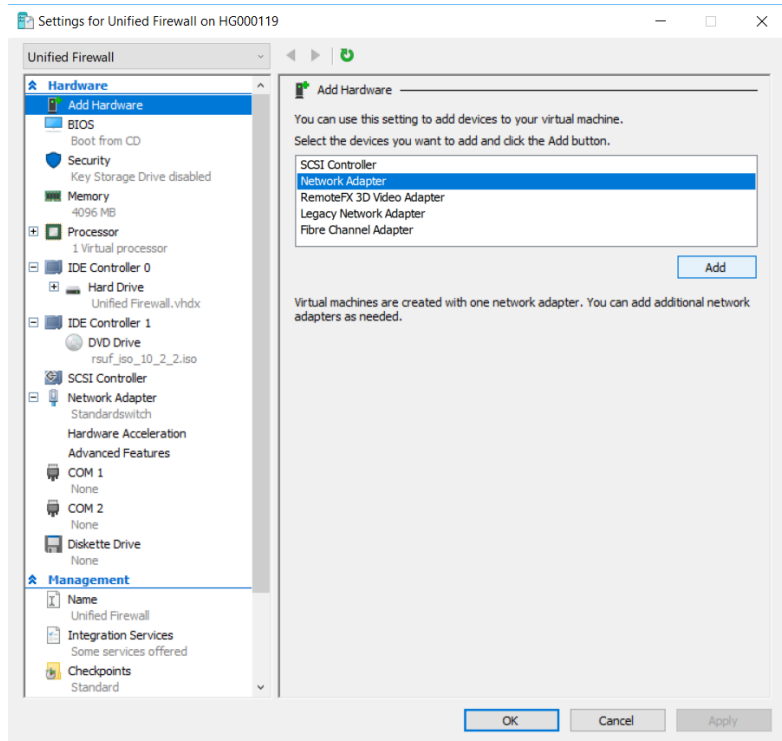


The virtual machine is now created and has to be configured subsequently. For this, select “Settings” in the “Actions” area of the Hyper-V Manager under “Unified Firewall”.

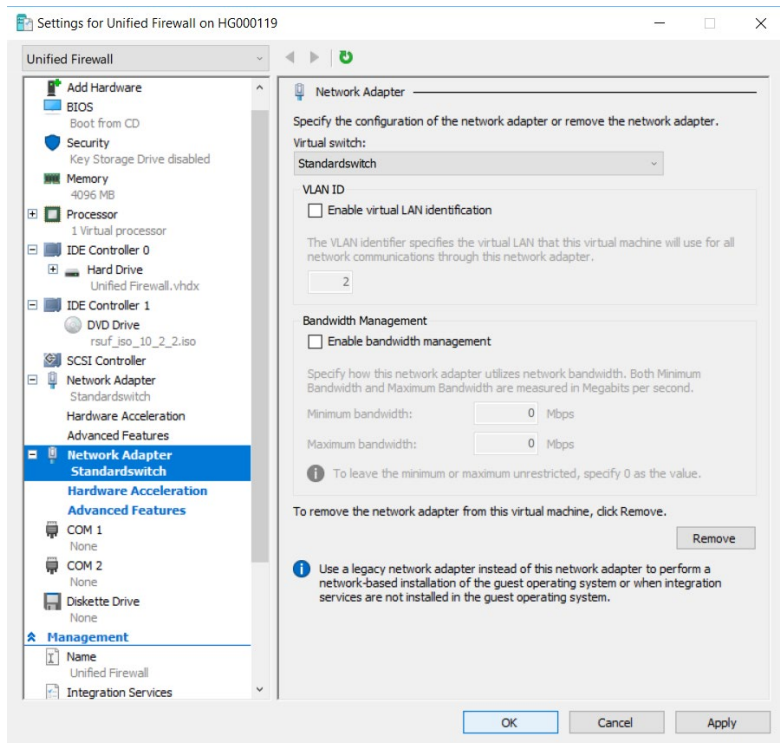


Displays the virtual machine settings user interface.

The “Settings” window opens. In the left area under “Hardware”, select the item “Add Hardware”. Then, in the right area, select “Network Adapter”. Confirm with “Add”.

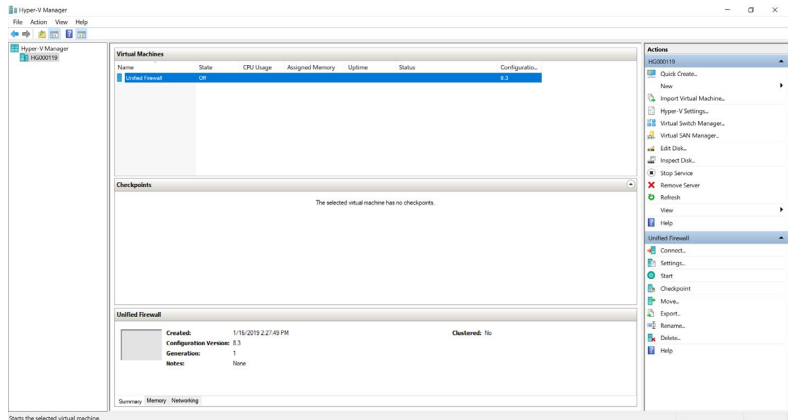


In the next window under “Virtual Switch”, select the item “Standardswitch”. A second network adapter shows up in the left area of the window. Confirm with “OK”.



Starting the LANCOM vFirewall in the Microsoft Hyper-V Manager

In the main window of the Microsoft Hyper-V Manager, under “Actions / Unified Firewall”, select the item “Start”, and then “Connect”.



A separate console window pops up. Continue with the installation of the LANCOM vFirewall on the console as described in the next chapter.

Final installation of the LANCOM vFirewall on the console

The following menu navigation on the console is basically valid for all virtual environments described in this installation guide. Variations between these systems are marked by separate screenshots.

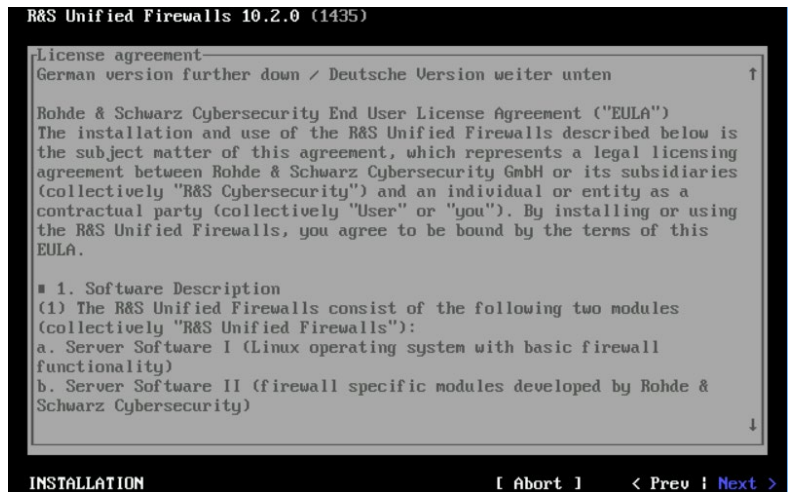
After the start of the console the following window appears:

Language selection

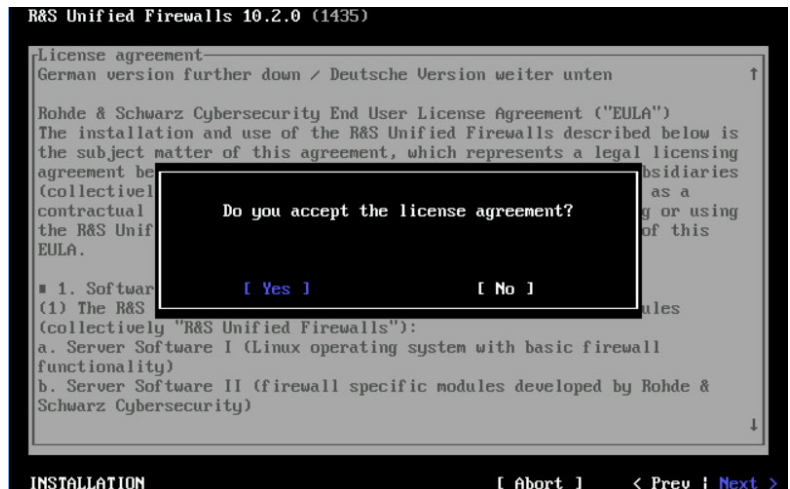


Choose your keyboard language and click on "Next".

License agreement



Confirm the license agreement with “Next” and the following dialog with “Yes”.



Overview of the detected hardware

→ VMware ESXi:



→ Oracle VirtualBox

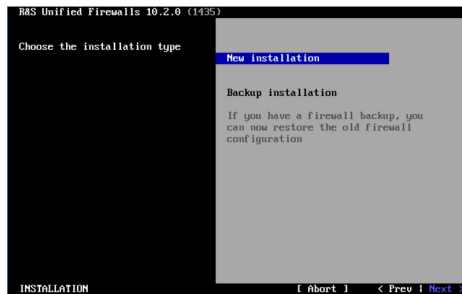


→ Microsoft Hyper-V



Respectively, confirm with "Next".

Selection of the installation type



Confirm “New Installation” with “Next”.

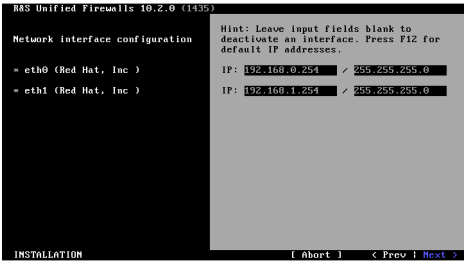
Configuration of the network interfaces

The default IP addresses are allocated to the network interfaces by pressing F12. The following screenshot appears:

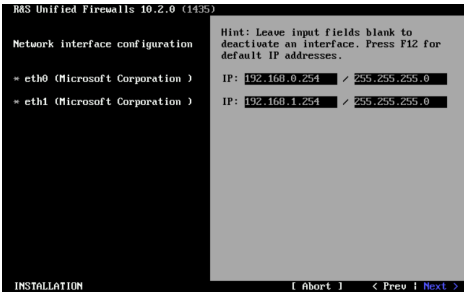
→ VMware ESXi



→ Oracle VirtualBox



→ Microsoft Hyper-V

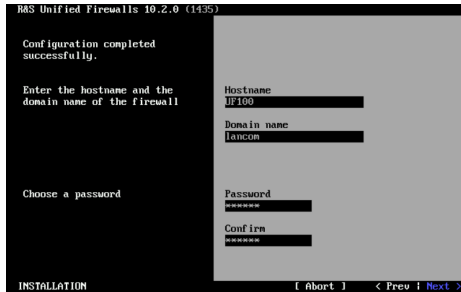


Respectively, confirm with “Next”.

Input dialog for host- and domain name

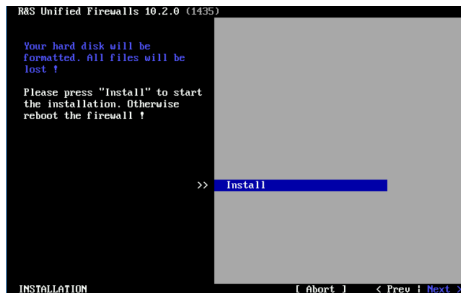
Configure as follows:

- Hostname: UF100
- Domain name: lancom
- Password: freely selectable



Click on "Next" to confirm your input.

Start of the installation



Confirm with "Next".

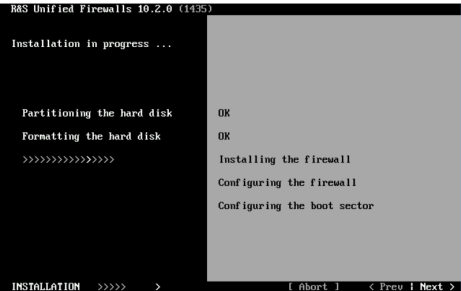
Confirm formatting of the virtual harddisk



Confirm the question to format the virtual harddisk with "Yes".

Proceeding the installation

The installation is now executed and can take some time (up to 10 minutes), typically only a few minutes.




After successful installation you will notice the following screen:

Confirm with „Next“ to get to the next screen.

Confirm the restart request with "Reboot".

Completing the LANCOM vFirewall installation

After the restart the following screen occurs:

A screenshot of a terminal window showing the LANCOM vFirewall installation completion. The text is as follows:

```
The Rohde & Schwarz Cybersecurity Unified Firewall is running properly now!  
To manage the firewall, log in to the web administration interface  
by pointing your browser to port 3438 via HTTPS on any configured  
address.  
  
For security reasons we advise you not to login to the firewall via console.  
If you wish to login anyway, you can get a decrypted login password from  
Rohde & Schwarz Cybersecurity.  
  
Version: 10.2.0-1435  
  
Network:  
eth0      : 00:15:5d:01:1a:00  192.168.0.254/24  
eth1      : 00:15:5d:01:1a:01  192.168.1.254/24  
lo        : 127.0.0.1/8  
  
vFirewall login: _
```

The installation has now completed. A console login is not necessary. Follow the information according the user login in the browser via the predefined interfaces, as shown in the screenshot.

Logging in to the LANCOM vFirewall via web interface

Start a web browser on a computer which is located in the subnet of the vFirewall and invoke the LANCOM vFirewall web interface as follows:

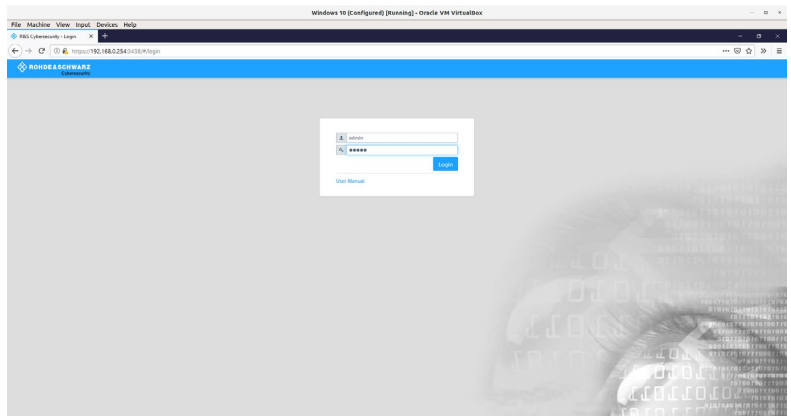
For connecting to the network interface eth0 please enter:

`https://192.168.0.254:3438`

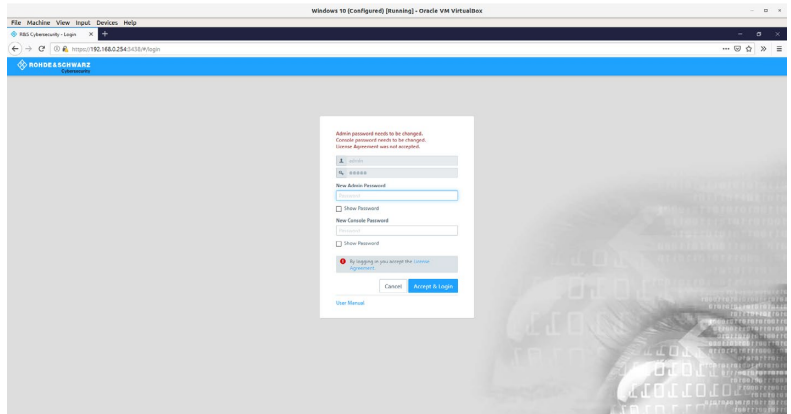
or for network interface eth1:

`https://192.168.1.254:3438`

The login window of your LANCOM vFirewall appears. Enter **admin** both for username and password.



You are asked to create a new password.



After creating the new password you are automatically logged in and the web interface of your LANCOM vFirewall shows up. Now you can continue with either the Setup Wizard or a manual setup.

Setup tutorials

Here are some helpful videos and tutorials to help you set up your LANCOM vFirewall:

<https://www.lancom-systems.com/uf-tutorials>

Alternatively, you can scan this QR code to view it on your smartphone:



LANCOM Systems GmbH
Adenauerstr. 20/B2
52146 Würselen | Germany
info@lancom.de
www.lancom-systems.com