# Quickstart

## with F&S Development Machine

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## **About This Document**

This document describes how to configure and setup the F&S Development Machine with virtual Box. The F&S Development Machine is configured for the following architectures fsimx6, fsimx6sx, fsimx6ul and fsimx7ulp.

#### Remark

The version number on the title page of this document is the version of the document. It is not related to the version number of any software release. The latest version of this document can always be found at <u>http://www.fs-net.de</u>.

#### How to Print This Document

This document is designed to be printed double-sided (front and back) on A4 paper. If you want to read it with a PDF reader program, you should use a two-page layout where the title page is an extra single page. The settings are correct if the page numbers are at the outside of the pages, even pages on the left and odd pages on the right side. If it is reversed, then the title page is handled wrongly and is part of the first double-page instead of a single page.



#### **Typographical Conventions**

We use different fonts and highlighting to emphasize the context of special terms:

File names

Menu entries

Board input/output	
Program code	
PC input/output	
Listings	

Generic input/output

Variables

## History

Date	V	Platform	A,M,R	Chapter	Description	Au
2017-01-01	1.0	Linux	A	All	Initial document generation	
2017-04-10	1.1	Linux	М	All	vlodify different chapters because of reworking the user tool	
2017-05-05	1.2	Linux	М	All	Aade some small changes	
2019-12-10	1.3	Linux	М	All	Setup document for Fedora 27	PJ
2020-05-04	1.4	Linux	М	All	Add new layout for document	PJ
V Ver	sion					
A,M,R Add	A,M,R Added, Modified, Removed					

Au Author





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### 1 Welcome



#### What's it all about?

"F&S Development Machine – Fedora 27" is a VirtualBox Appliance based on Fedora 27 provided by F&S.

It contains the installed Board Support Packages for fsimx6, fsimx6sx and fsimx6ul. The F&S toolchain is installed, the source code is extracted and ready to run. System packages that are needed are installed too.

#### Why should I use it?

Because it saves time. A lot of configuration is already done. Compilation has been tested and is working out of the box. Missing packages are installed etc.. Just a few points that belong to your decision can't be done beforehand. For example if you want to have 'your favorite IDE'. By default Qt Creator, vim, emacs, and pluma are preinstalled. Besides that we try to keep the image as small as possible.

#### When should I not use it?

There are just two cases not to use this virtual machine. First when you are going for a native development machine. Second when you absolutely want to go with 'your favorite distribution' and it's not Fedora.



Import the Appliance

## 2 Import the Appliance

Let's import our new virtual machine. If you haven't downloaded yet log in at our website <a href="https://www.fs-net.de/">https://www.fs-net.de/</a> and download F\_S\_Development\_Machine-Fedora\_27\_V1.X.ova. Open your VirtualBox Manager and click:

 $\mathsf{File} \to \mathsf{Import} \; \mathsf{Appliance}$ 

<b>1</b>	Dracle VM VirtualBox Manager		
File	Machine Help		
S	Preferences	Ctrl+G	😥 Details 💷 Snapshots
Q	Import Appliance	Ctrl+I	
R	Export Appliance	Ctrl+E	Welcome to VirtualBox!
	Virtual Media Manager Network Operations Manager Check for Updates Reset All Warnings Exit	Ctrl+D Ctrl+Q	Welcome to VirtualBox! The left part of this window is a list of all virtual machines on your computer. The list is empty now because you haven't created any virtual machines yet. In order to create a new virtual machine, press the New button in the main tool bar located at the top of the window. You can press the F1 key to get instant help, or visit www.virtualbox.org for the latest information and news.
Imp	oort an appliance into VirtualBox		

Figure 1: Import the Appliance

Select your downloaded F\_S\_Development\_Machine-Fedora\_27\_V1.X.ova file in the dialog and click next.



Import Virtual Appliance	
Appliance to import VirtualBox currently supports importing appliances saved in the Open Virtualization Format (OVF). To continue, select the file to import below.	
	3
Expert Mode Next Cancel	

Figure 2: Choose the \*.ova file

When you have done this you can see all the details of the virtual machine like name, version and the hardware configuration. First check if the hardware settings for CPU and RAM correspond to your needs and to the performance of your host machine. Second you can adjust the name if you have imported an appliance with this name before or if you want to use another name.



#### Import Virtual Appliance

#### Appliance settings

These are the virtual machines contained in the appliance and the suggested settings of the imported VirtualBox machines. You can change many of the properties shown by double-clicking on the items and disable others using the check boxes below.

Virtual System 1		^		
😽 Name	F_S_Development_Machine-Fedora_27_V1.0			
🗩 Vendor	F&S Elektronik Systeme GmbH			
🗐 Vendor-URL	https://www.fs-net.de/			
Version	1.0			
Description	This linux virtual maschine was build to give you a quickstart in developin			
📃 Guest OS Type	🜠 Fedora (64-bit)			
CPU	4	¥		
You can modify the base folder which will host all the virtual machines. Home folders can also be individually (per virtual machine) modified.				
C:\Users\Jakob\VirtualBox VMs				
MAC Address Policy: Generate new MAC addresses for all network adapters				
· · · · · · · · · · · · · · · · · · ·	ener nine date ses for all netholic dapters			
Additional Options: 🗹 Impo	rt hard drives as VDI			

Figure 3: Adjust appliance settings

Restore Defaults

Import

Cancel

Don't forget to Change the MAC Address Policy to Generate new MAC addresses for all network adapters.

Now there is nothing left except for clicking on Import. Depending on your machine it will take about 10 minutes.

#### Note:

After import of the appliance check the system configuration and if necessary customize it, e.g. virtual CPU's, RAM, network settings ...



?

 $\times$ 

## **3 Using the Virtual Machine**

### 3.1 Boot your VM

After importing start your virtual machine by selecting it on the left and clicking on Show.

😨 Oracle VM VirtualBox Manager					
File Machine Help					
New Settings Discard Start		Contraction Details Details			
F&S Development Maschine - Fedora 23	🧾 General	Preview			
	Name: F&S Development Maschine - Fedora 23 Operating System: Fedora (64-bit)				
	System				
	Base Memory: 2048 M8 Processors: 2 Boot Order: Floppy, Optical, Hard Disk Acceleration: VT-x/AMD-V, Nested Paging	P&S Development Maschine - Fedora 23			
	Display				
	Video Memory: 12 MB Remote Desktop Server: Disabled Video Capture: Disabled				
	Storage				
	Controller: IDE IDE Secondary Master: [Optical Drive] Empty Controller: SATA SATA Port 0: F&S Development Maschine - Fedora 23-disk1.vm	ndk (Normal, 100,00 GB)			
	🕞 Audio				
	Host Driver: Windows DirectSound Controller: ICH AC97				
	🕑 Network				
	Adapter 1: Intel PRO/1000 MT Desktop (Bridged Adapter, Realtek PCIe G	BE Family Controller)			
	US8 Controller: OHCI Device Filters: 0 (0 active)				
	Shared folders				
Start selected virtual machines		بر بر			

Figure 4: Boot your VM

### 3.2 Login

After boot you will be asked for the login. Use the user developer and log in with password developer.



Using the Virtual Machine



Figure 5: Login with password developer

### 3.3 Directory Structure

The fsimx6, fsimx6sx, fsimx6ul and fsimx7ulp releases are located in the home directory of developer. There are also the two FreeRTOS releases for fsimx6sx and fsimx7ulp located.

Inside the releases you will find, documentation, binaries, source code etc.. Links to the releases are on the desktop too.

If you want to build the system please take a look at the "LinuxOnFSBoards\_eng.pdf" document in the docs folder of your preferred release.

#### Note:

The release fsimx6-B2019.08 needs the fs-toolchain-7.4-armv7ahf, the newer releases fsimx6ul-B2019.11 and fsimx6sx-B2019.11 needs fs-toolchain-8.3-armv7ahf.

The default toolchain is fs-toolchain-8.3-armv7ahf.

You can switch the toolchain by open a terminal and execute "settoolchain". Then you can select your Toolchain.

### 3.4 TFTP Server

There is a TFTP Server that starts automatically when booting. Simply lay your files in the /tftpboot/ folder.



### 3.5 NFS Server

An NFS Server is starting automatically when booting. It uses the directories /download and /rootfs. You can put your files there or mount a root file system image as loop back device. Please consult the 'First Steps' manual for detailed information.

### 3.6 Keyboard Layout

You can change your keyboard layout in the top panel on the right. By default it says  ${\tt en}$  here.

### 3.7 Guest Addition

The Guest Addition is already installed on the virtual machine. Features like shared folder or a shared clipboard can be activated in the settings when the virtual machine is not running.

#### Note:

The Guest Addition depends on the version of VirtualBox Manger. So maybe you have to install a new version of Guest Addition.



Appendix

## 4 Appendix

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### **Important Notice**

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