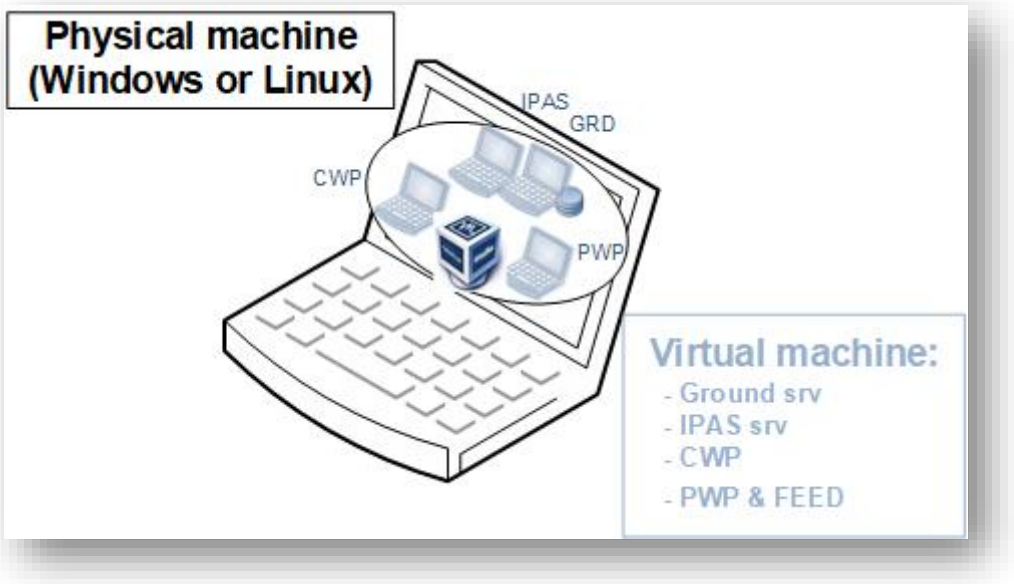
1. Introduction

The Goal of this document is to describe the main steps of Escape Light Platform Installation. It will required to have good notions of Linux (Red Hat) installation and administration. Basic notions of database administration will be a most in a second time. Basic notion of VirtualBox Software also. Otherwise, it is mandatory to know the Bios password (if there is one) and the system password (root or Windows administrator according to the case).

BE CAREFUL:
This document describes the Escape Light Simulation platform installation under Virtual Machines; the software currently used is Oracle VirtualBox. Some package of this software is licensed and can require to buy a license according to the usage: https://www.virtualbox.org/wiki/Licensing_FAQ . We will install only the following package: VirtualBox base package and VirtualBox Guest Additions. But for specific reason, you could need the VirtualBox Extended Pack which can require some fees. So please verify this point with your software department.

2. Platform

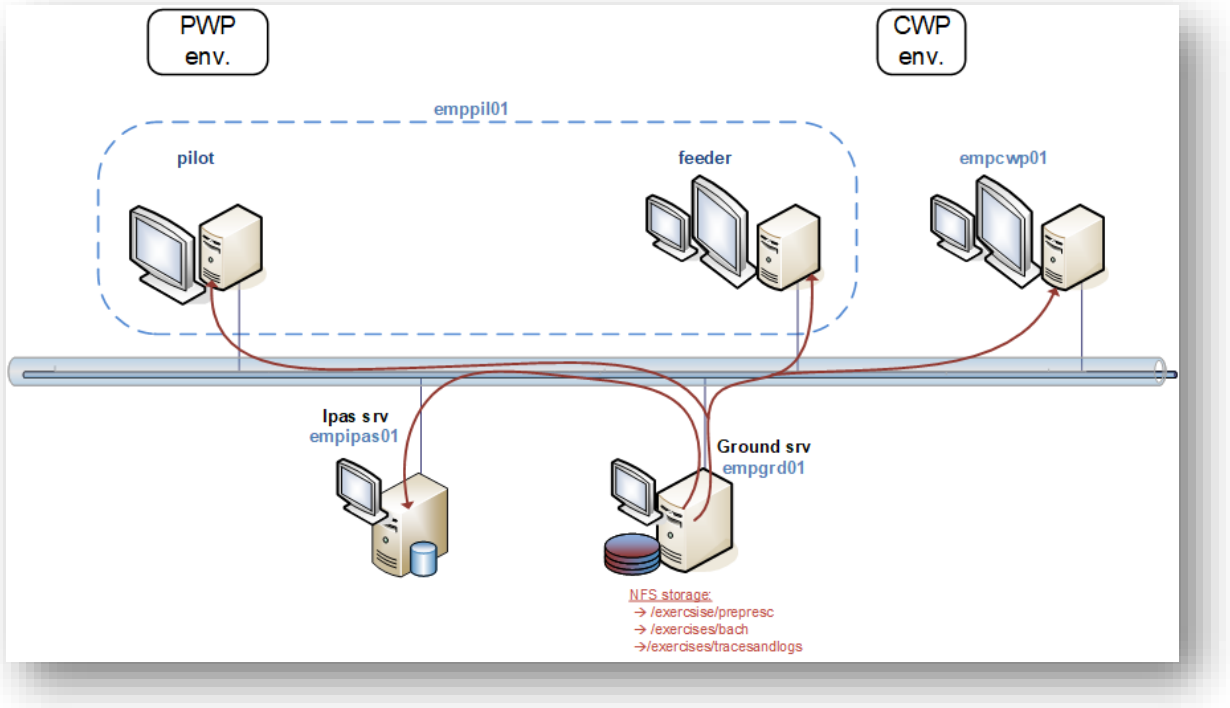
Infrastructure view:



- 4 virtual machines (VMs) are created on a physical machine.
- Physical hardware must be compliant with the performance required: 4 VMs means CPU, memory, disks. We recommend: core i7/16Go/500Go SSD
- Space disk required by the platform (4 x Virtual machines) is around 35 Go, so please verify you have around 50 Go available;
- Physical hardware must be compliant with the virtualization technology. BIOS parameters should be activated. For example on HP ZBook machine :
  - Virtualization Technology (VTx)
  - Virtualization Technology for Directed I/O (VTd)

At least, some Windows installation policies like "Virtualization-based security" can disrupt VirtualBox usage. In this case, you need to verify this parameter is set to "Not Enabled". You find it via the "Local Group Policy Editor".
Another point is the "Windows Hypervisor Platform"; this parameter must be uncheck (off). You can find it via a "Search: Turn Windows features on or off"
Some software (like Antivirus), can also disrupt the VirtualBox usage.

Architecture view:



- The Ground server is also a NFS server to store Data simulation
- IPAS server use Oracle XE software and is in charge of the Data preparation
- The Pilot Working Position is also a Feed position

3. Platform installation

3.1 Repository

What you need?

- VirtualBox software for Windows 10, CentOS 6 and CentOS 7 (VirtualBox_Software)
- Ground server, Ipas server, CWP, PWP VM image (EscapePltfVmImages)
- The documentation

Where download that?

USB Stick

EUROCONTROL FTP

Internet Share Drive

3.2 Pre-installation → BIOS parameters

According to your machine model, the way to access to the BIOS parameters can be different (Esc, F8 or F10…).
In the "Advanced" parameters, please activate the virtualisation parameter(s). According to your model of machine, the name of this setting change. For HP ZBook machine: VT-x and VT-d

3.3 Installation

Case 1: you have a Windows 10 machine

1. Open a Windows session as administrator account
2. Plug the USB Stick or copy directories from FTP site (or Google Drive)
3. Open a file Explorer : 2 share drive are appearing (NTFS_PKG and EscapeLight-19A); you just need to use EscapeLight-19A share
4. Select the directory VirtualBox (on the EscapeLight-19A share)
5. Install VirtualBox Software → execute *VirtualBox-6.1.4-136177-Win.exe*
6. Import the Virtual machines images:
    a. Open "File" and "Import Appliance"
    b. Select your image (From the EscapeLight-19A\EscapePltfVmImages directory): empgrd01-ACE19A-CentOS7u7.ova
    c. Click on the "Next" Button
    d. Indicate the folder of your future machine
    e. About the "MAC Address Policy": select "Include all network adapter MAC addresses"
    f. Validate via the button: Import

Repeat this action (6) for all images:

- empipas01-ACE19A-CentOS7u7.ova
- empcwp01-ACE19A-CentOS7u7.ova
- emppilfeed01-ACE19A-CentOS7u7.ova

Case 2: you have a Linux machine (CentOS/RedHat)

1. Open a linux session as root account
2. Plug the USB Stick
3. The USB stick should be automatically mounted (otherwise please mount it; be careful: there are 2 devices to be mounted)
4. If only the NTFS_PKG is mounted. That's means, you don't have still installed NTFS package to allow the Linux machine to mount NTFS Filesystem. So please install it:
   a. On the NTFS_PKG share, you will find NTFS rpm
   b. In /media directory, execute : *rpm –ivh ntfs-3g-2017.3.23.el<version>.x86_64.rpm*
   c. Reboot

   Now, your machine should be able to mount the A19A-COS7U7share drive
5. Install VirtualBox Software → execute: *rpm –ivh /<mount point>/ A19A-COS7U7 /VirtualBox_Software/VirtualBox-6.1-6.1.4-136177-el<**6/7**>-1.x86_64.rpm* → choose the version (6 or 7) corresponding to your OS!
6. Launch VirtualBox executing: ./usr/bin/virtualbox
7. Import the Virtual machines images:
   a. Click on "File" and "Import Appliance"
   b. Select your image for GRD server first (From the /media/ A19A-COS7U7\EscapePltfVmImages directory): empgrd01-ACE19A-CentOS7u7.ova
   c. Click on the "Next" Button
   d. Indicate the folder of your future machine (e.g. /data/VirtualBox)
   e. About the "MAC Address Policy": select "Include all network adapter MAC addresses"
   f. Validate via the button: Import

   Repeat this action (6) for all images:
   - empipas01-ACE19A-CentOS7u7.ova
   - empcwp01-ACE19A-CentOS7u7.ova
   - emppilfeed01-ACE19A-CentOS7u7.ova

4. Before starting Escape Supervision

Before launching Escape Supervision (after having launched the 3 VMs (empgrd01, empcwp01, emppil01)), you need to verify/adapt the displays/screens resolutions:

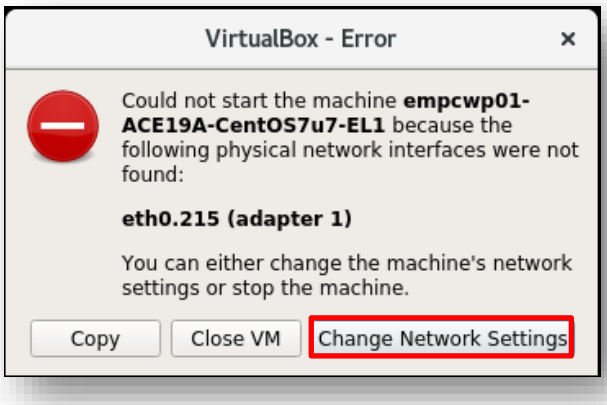
- empgrd01 → virtual screen 1 : 1920x1080
- empcwp01 → virtual screen 1 : 1920x1080
- emppil01 → virtual screen 1 : 1680x1050 and virtual screen 2 : 1920x1080

For emppil01, that's mandatory the virtual screen 2 resolution was bigger than the virtual screen 1 resolution.

5. FAQ

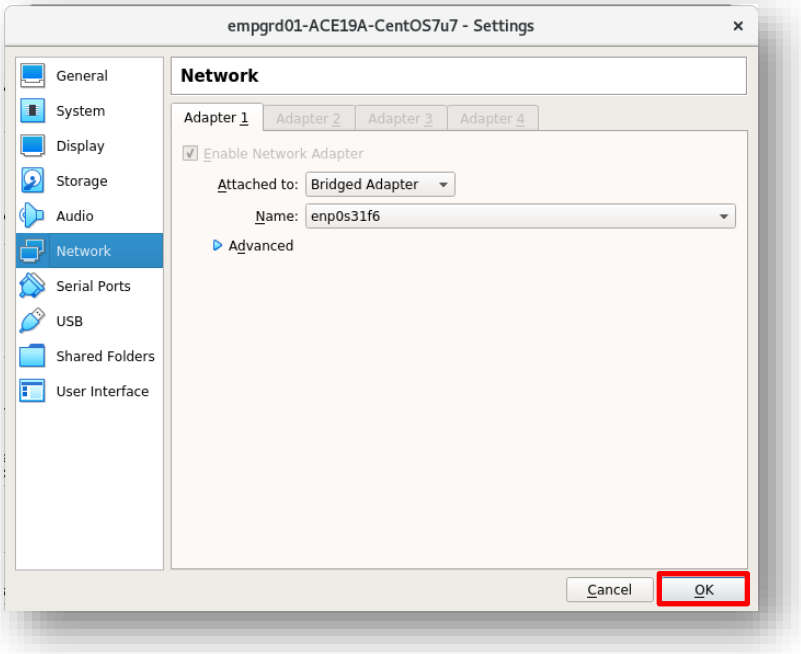
Why I have a network error message during the first start?

This kind of message can appear when you start the VM for the first time:



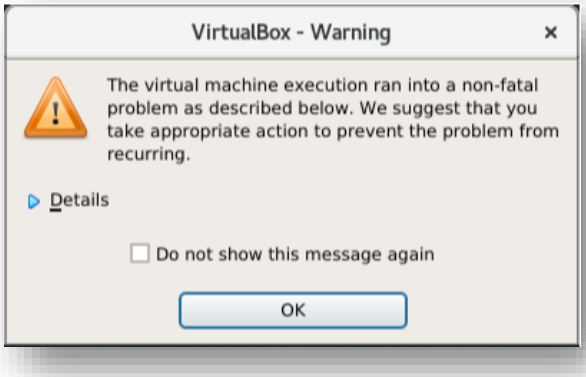
That is due to the fact that the network interface name available on your machine is different from the one included in the image. You just need to adapt it:

1. Select the "Change Network Settings" button
2. Validate the proposition → press the "OK" button

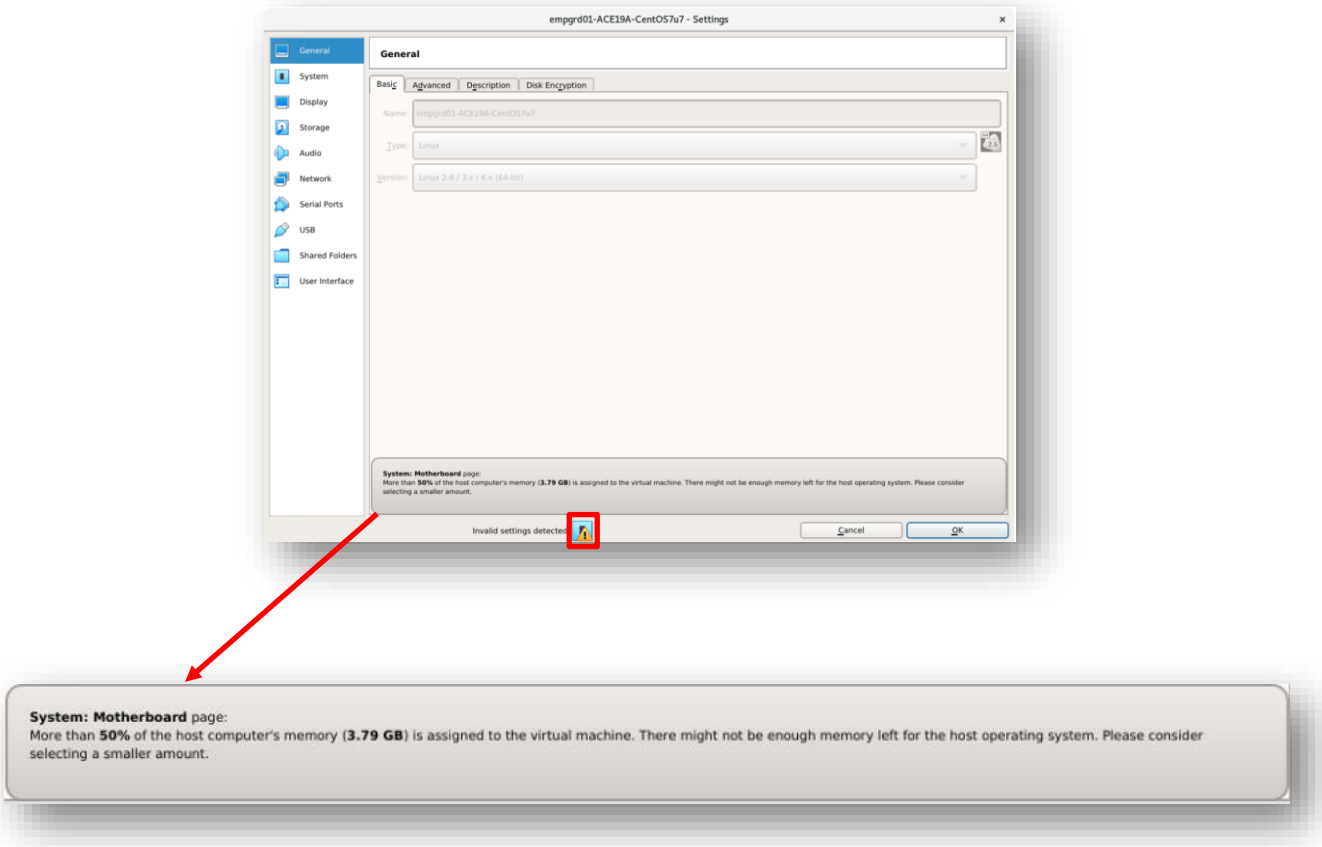


Why the VM doesn't want to start → Non-compliant settings: resource

In the case where you install the VMs provided by EUROCONTROL on a physical host with not enough resources (CPU, memory…), the virtual machines can just alert you about the fact the physical resources are not sufficient or the VM may simply not start.
This kind of message can appear:

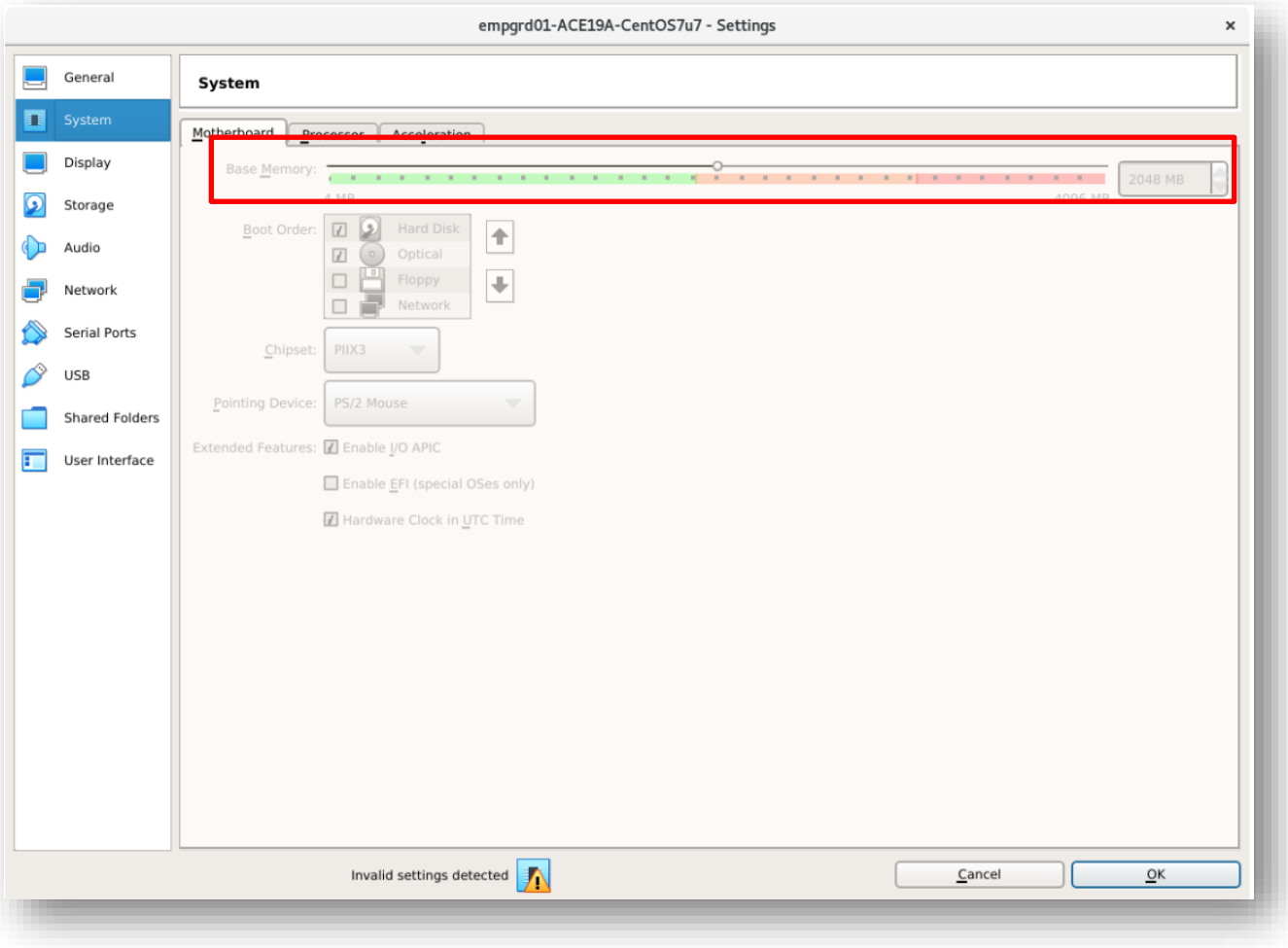


In this case, stop the machine if it has been started, open the setting (VirtualBox Menu):
An alert message appears at the bottom of the window when your mouse is on the "Alert icon":



You just need to adapt the VM settings to your physical resources.

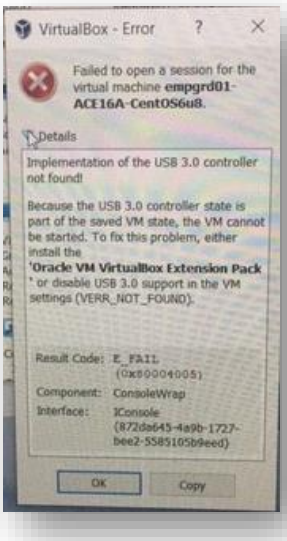
In the following example, you can see the memory allocation is superior to the mid of the global memory (orange zone). In this case, the machine can start without any change (just with warning).
If the memory would have been in the red zone, then the VM couldn't start!



Be careful: Escape requires a minimal hardware configuration to run correctly!

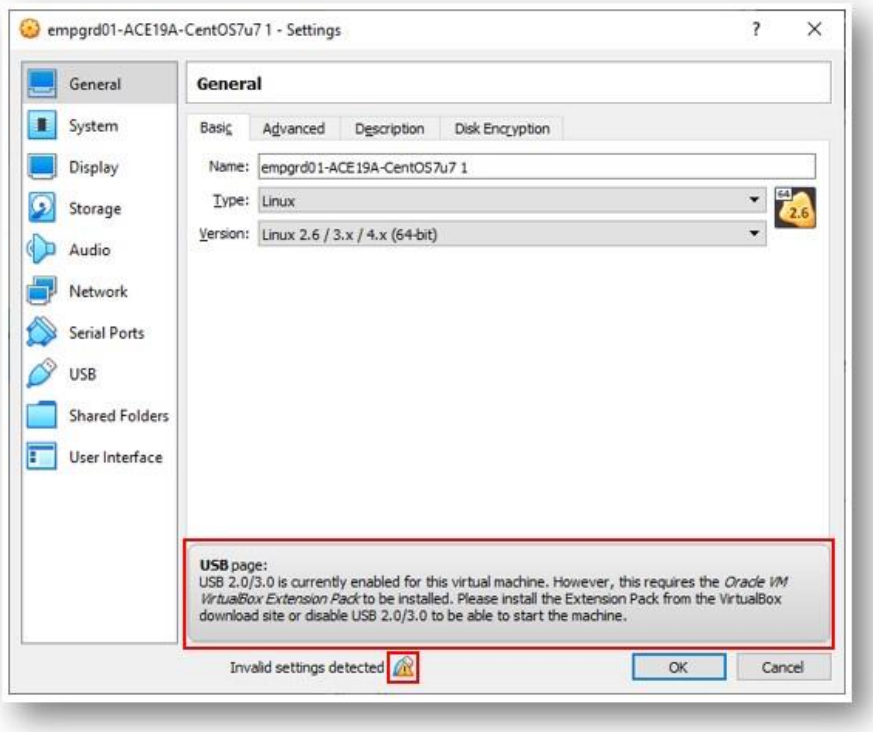
Why my VM doesn't want to start? → Non-compliant settings: USB3 Error

You shouldn't have this error:

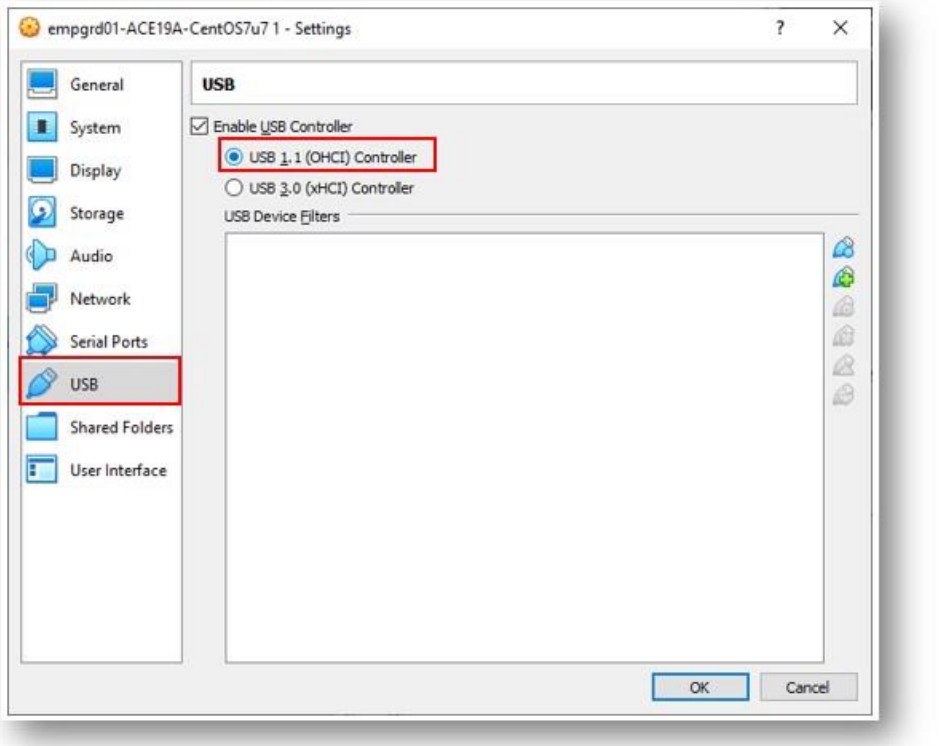


But if there is, you just need to change the USB type selected on your VM settings.

1. Close this windows à click "OK"
2. Select the VM and open the settings 
   You should have the following screenshot with the Warning icon: Invalid Settings, when your mouse is put on this icon, you can see the Warning message



3. So, you need to select the USB menu and select USB 1.1 type instead of USB3.0 type.



4. Click "OK" and start the VM

How to change the Keyboard type?

According to your keyboard type, you may need to change the language of it.
To do that:

1. Open a terminal
2. Execute the command (as root): system-config-keyboard

How to activate the second "screen" of emppil01?

Depending on the exercise, it can happen that emppil01 VM should have 2 screens (one for the Hybrid and one for the Pilot).
If your VM is not configured with 2 screens, you just need:

- to select the "View menu"
- And the Virtual Screen 2, you can "Enable" it; → do it.