HDDL-R Hyper-V Enabling User Guide

Hardware Requirements:

Intel® CPU with VT-d support

IEI Mustang-V100-MX8 HDDL-R Rev1.0 or IEI Mustang-V100-MX8-R11 Rev 1.1

Software Requirements:

Windows Server 2019 (1809) version 17763.737

Hyper-V 10.0.17763.1

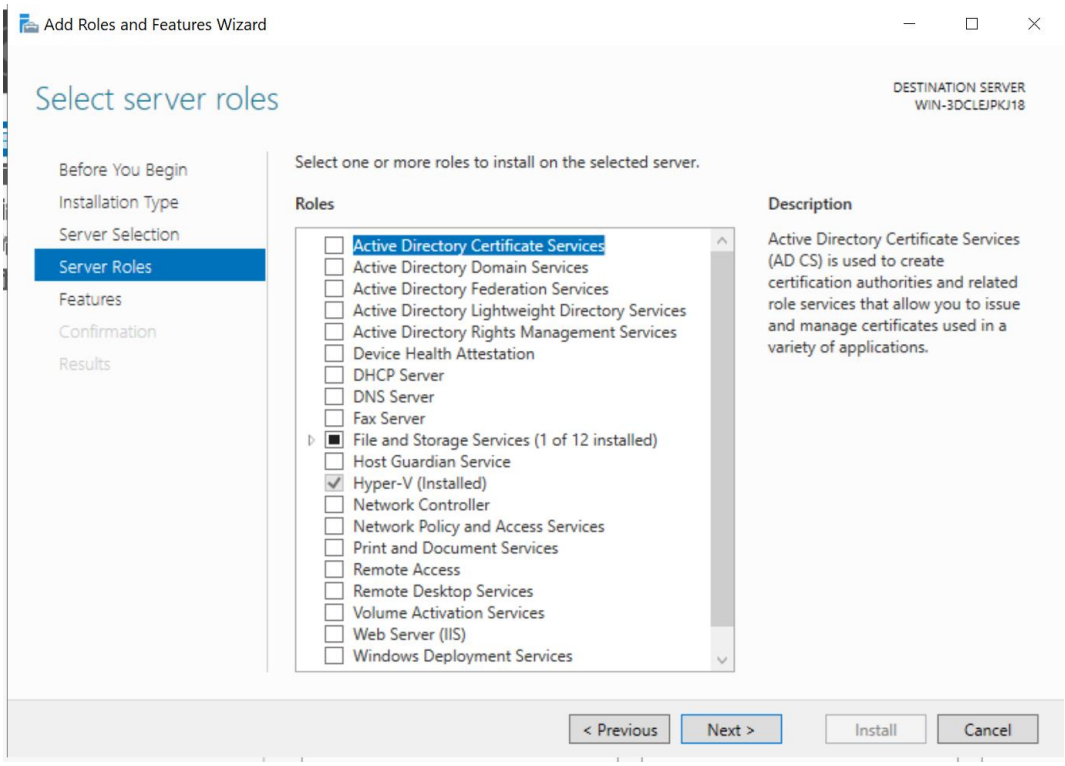
Ubuntu 18.04 as Guest OS kernel version 5.4.0-86-generic

OpenVINO 2021 R4

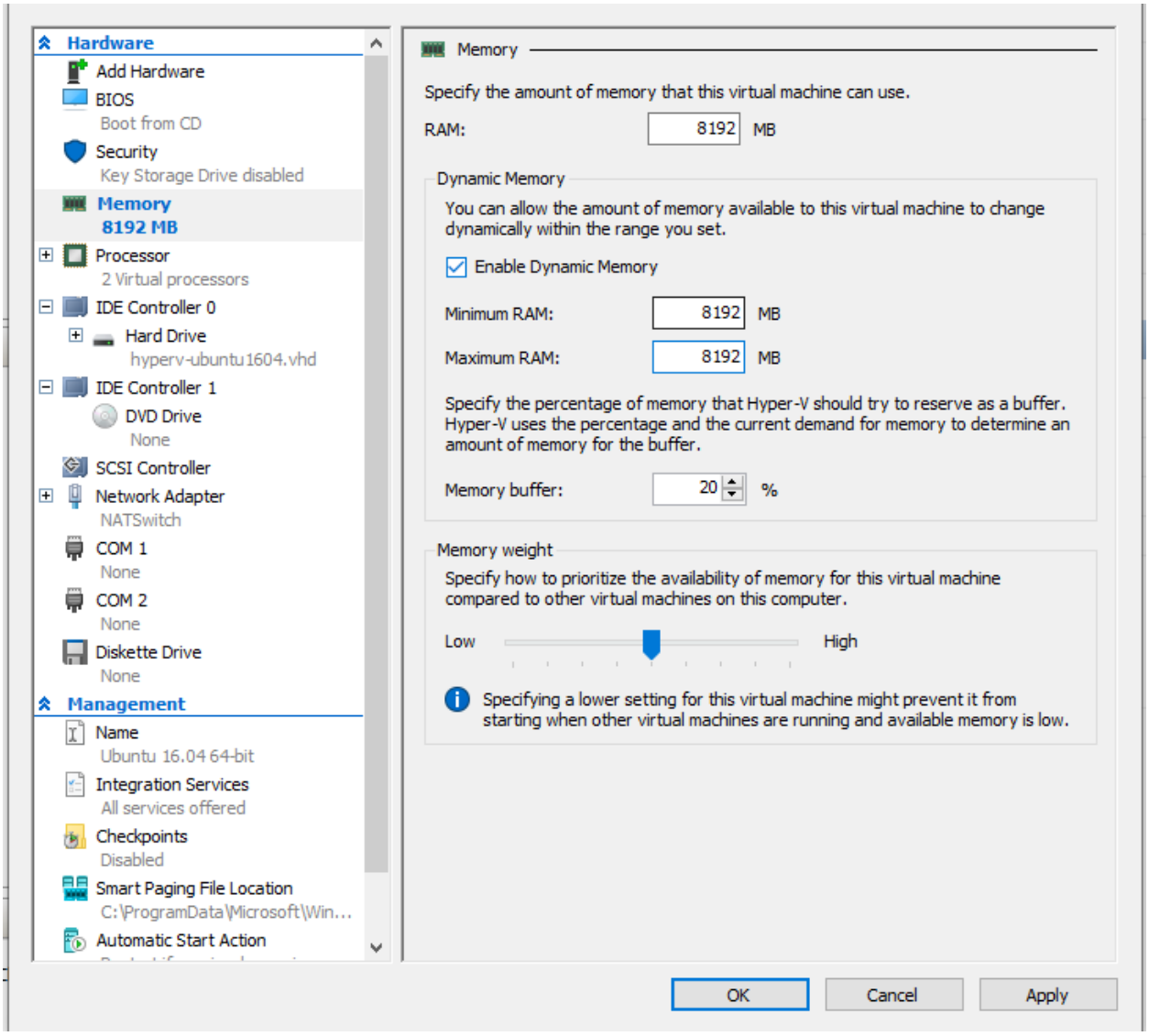
IEI HDDL-R plugin https://dls.ieiworld.com/IEIWeb/PDC_APP/PLM/OWFP000269/Mustang-V100_Linux_Plugin_1.0.3.20200212.tar.gz

Install Ubuntu 18.04 in Hyper-V

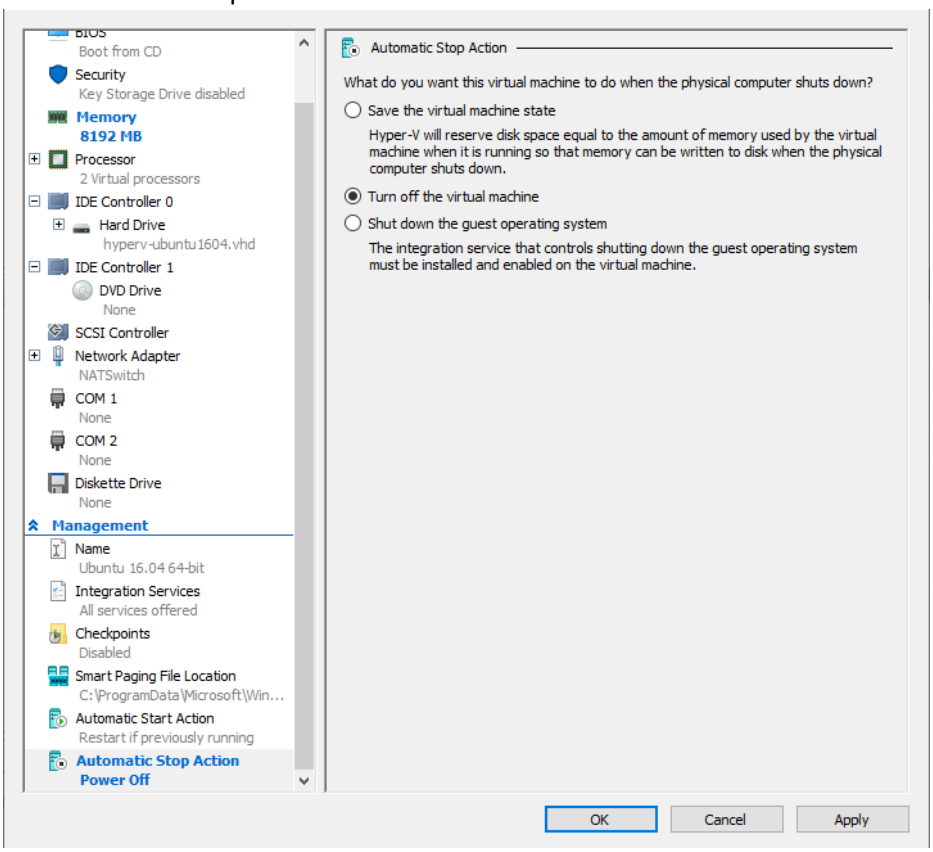
1. Install Windows Server 2019 and Hyper-V via Windows feature enabling option.



2. Create VM and install Ubuntu 18.04 as VM.
3. If Dynamic Memory is enabled in VM, either disable or set Minimum RAM and Maximum RAM to same amount.

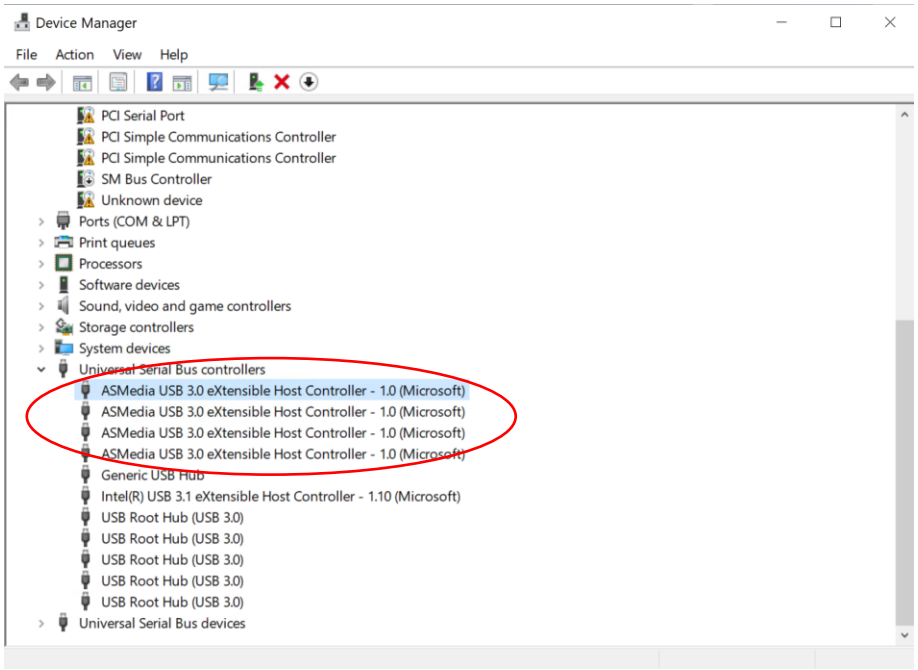


4. Set “Automatic Stop Action” to “Turn off the virtual machine”

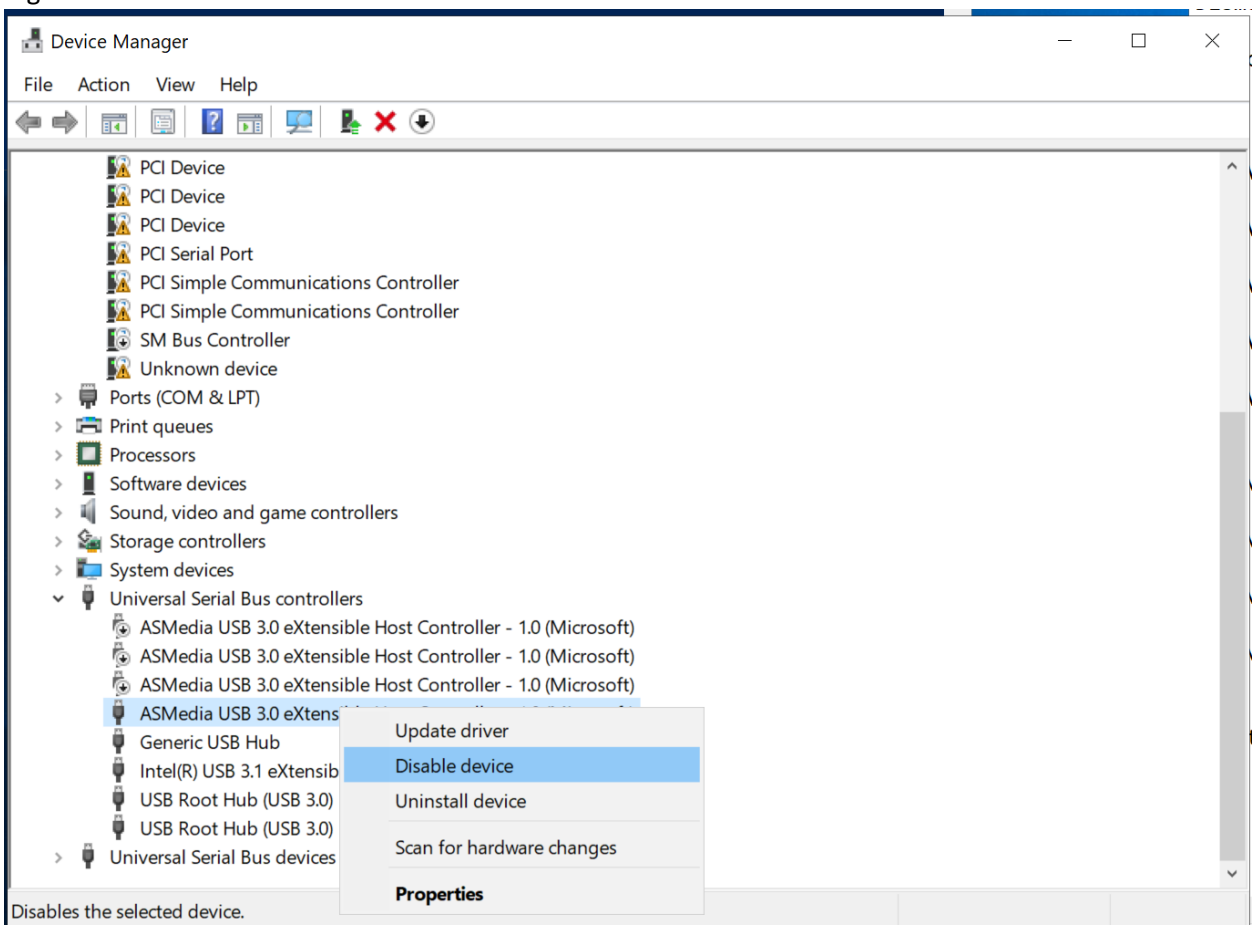


Preparing VT-d passthrough in Host

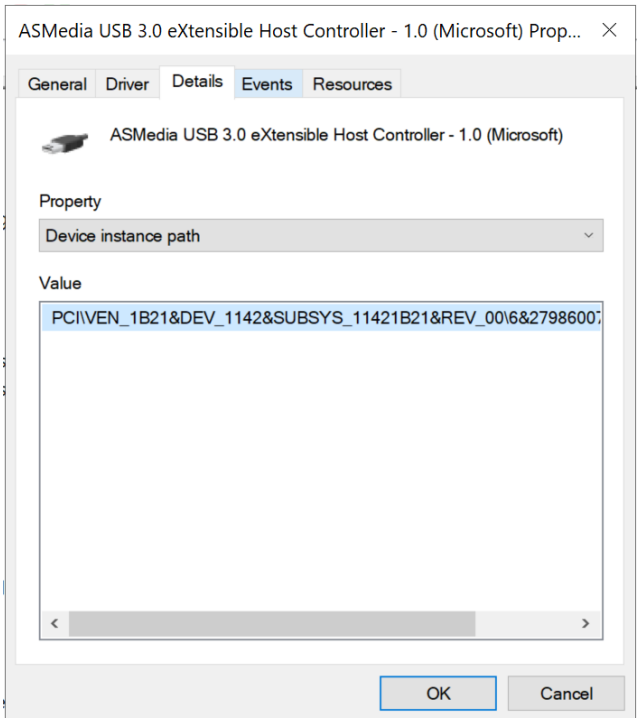
1. Look for “ASMedia 3.0 USB Controller” in Device Manager, there should be 4 devices visible.



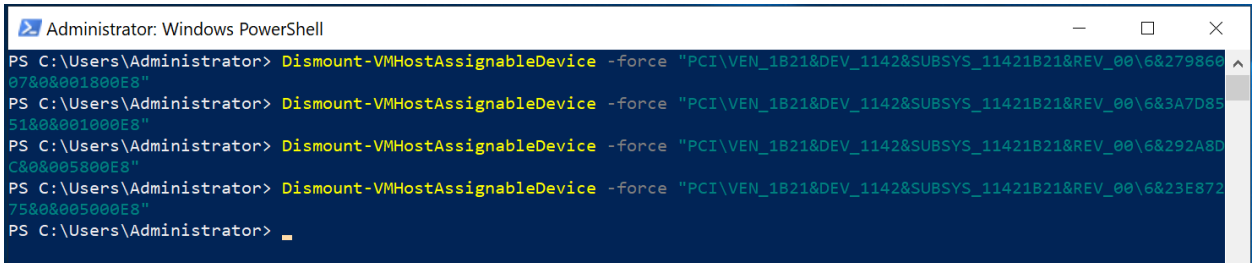
2. Right click and click “Disable” to all 4 “ASMedia USB 3.0 eXtensible Host Controller”.



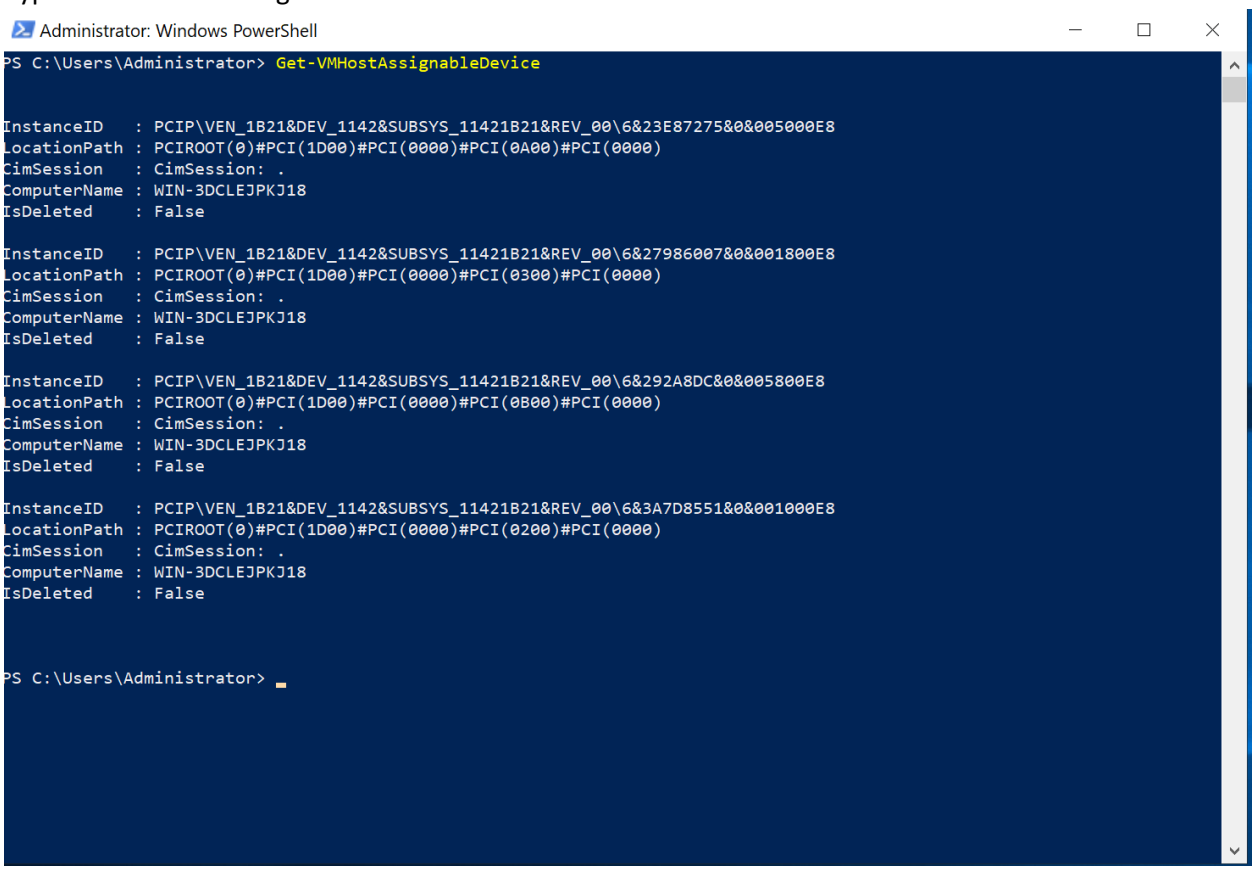
3. Take note of the Hardware ID of all 4 “ASMedia USB Controller”.



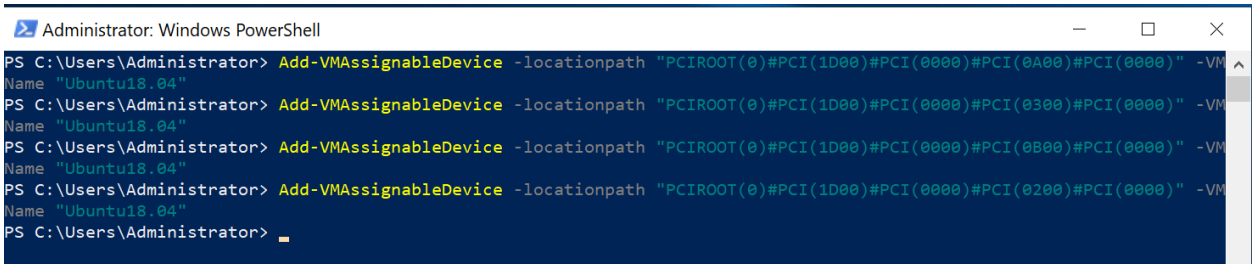
4. In Windows PowerShell, dismount all 4 ASMedia USB controllers from host. Use “Dismount-VMHostAssignableDevice -force “<Hardware ID>” for all 4 devices.



5. Type “Get-VMHostAssignableDevice” to ensure the devices are dismounted from host.



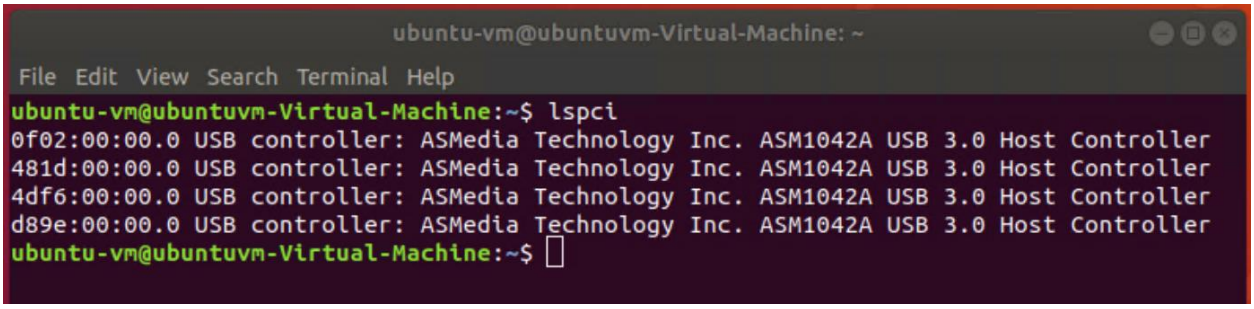
6. With the VM off, assign these 4 devices to the VM.



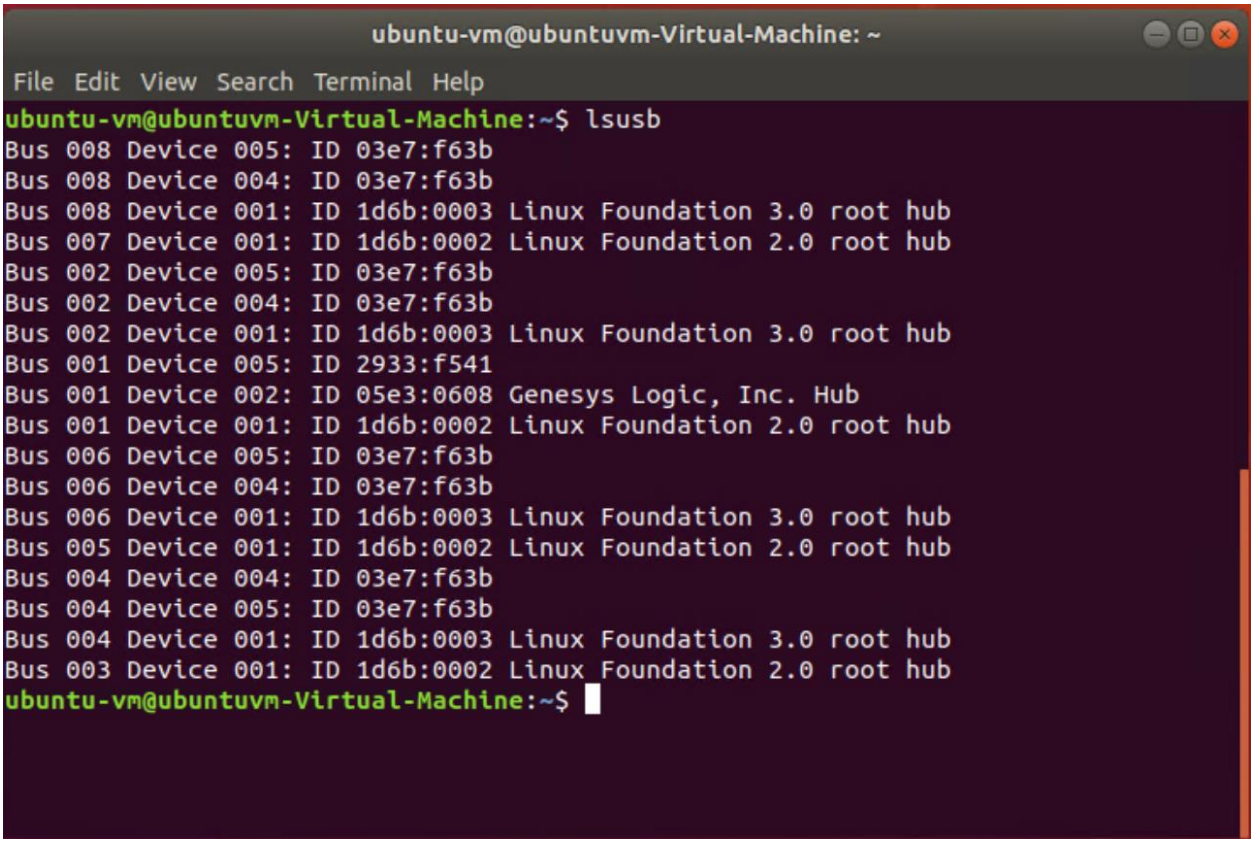
7. VM is ready and the devices are associated with VM “Ubuntu18.04” by now.

Start VM and install OpenVINO

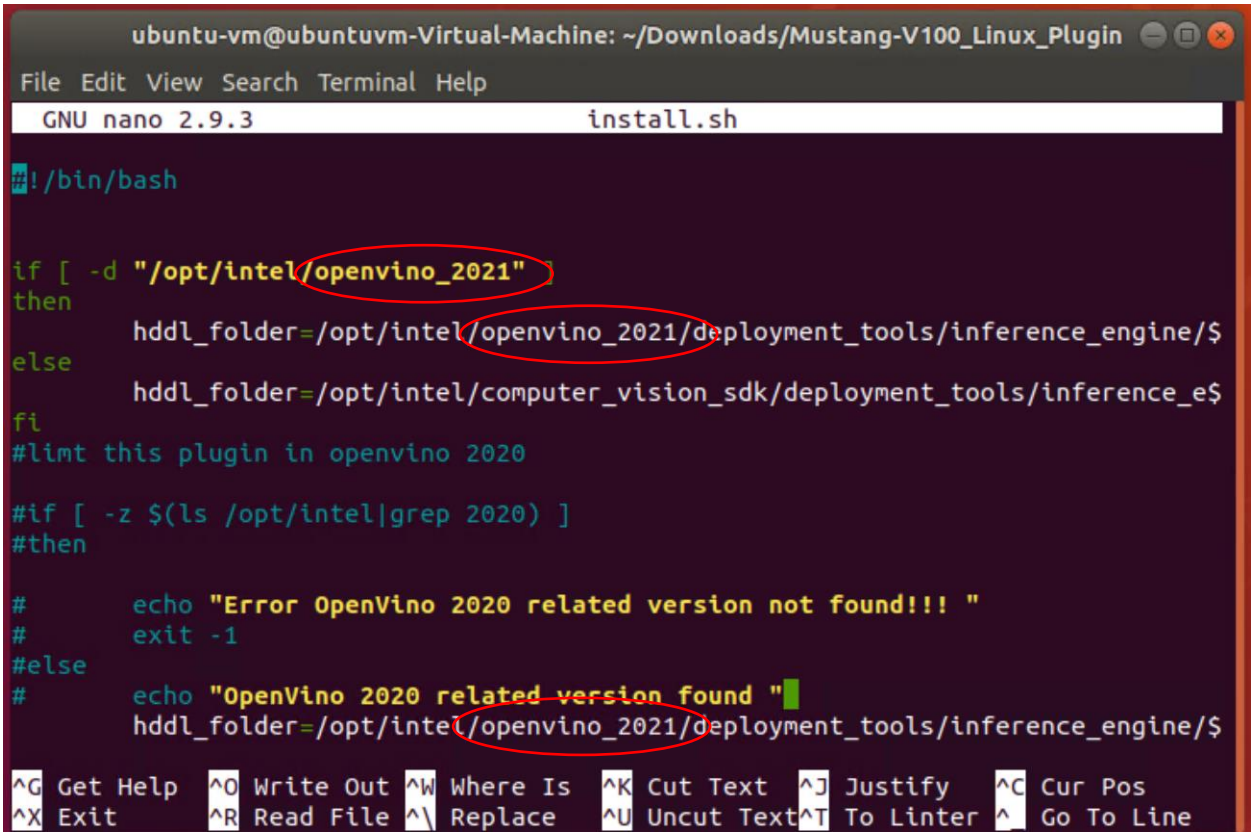
1. Start VM with Ubuntu 18.04 as guest OS.
2. Install OpenVINO by following guide from https://docs.openvinotoolkit.org/latest/openvino_docs_install_guides_installing_openvino_linux.html
3. Install HDDL-R prerequisite and drivers.
4. (Optional for IEI Mustang-V100-MX8 Rev 1.0) If your HDDL-R card is IEI Mustang Rev 1.0, the USB HID device is MSP430-USB different from Rev 1.1 and requires additional drivers from here: https://dls.ieiworld.com/IEIWeb/PDC_APP/PLM/OWFP000269/Mustang-V100_Linux_Plugin_1.0.3.20200212.tar.gz
5. Verify “ASMedia controllers” are being pass-through into the VM by using “lspci”.



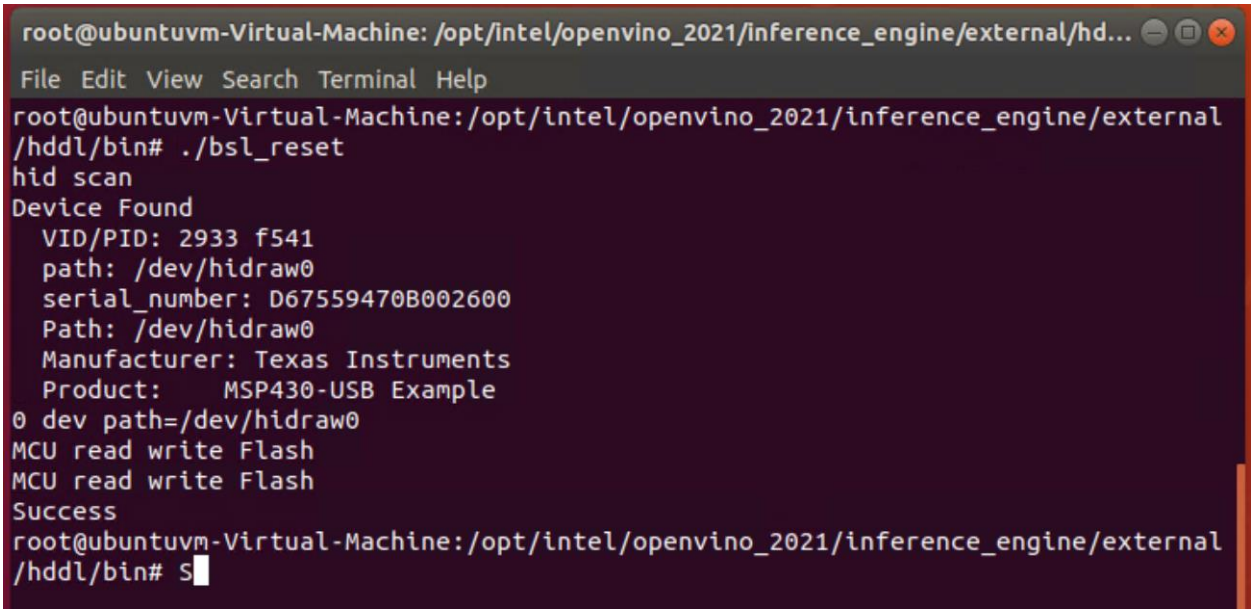
6. Verify all Movidius X USB devices is also visible in the VM by using “lsusb”.



7. (Optional for Mustang-V100-MX8 Rev 1.0) To support OpenVINO 2021, the additional package downloaded from IEI website needs to be modified, from “openvino” to “openvino_2021” as below:

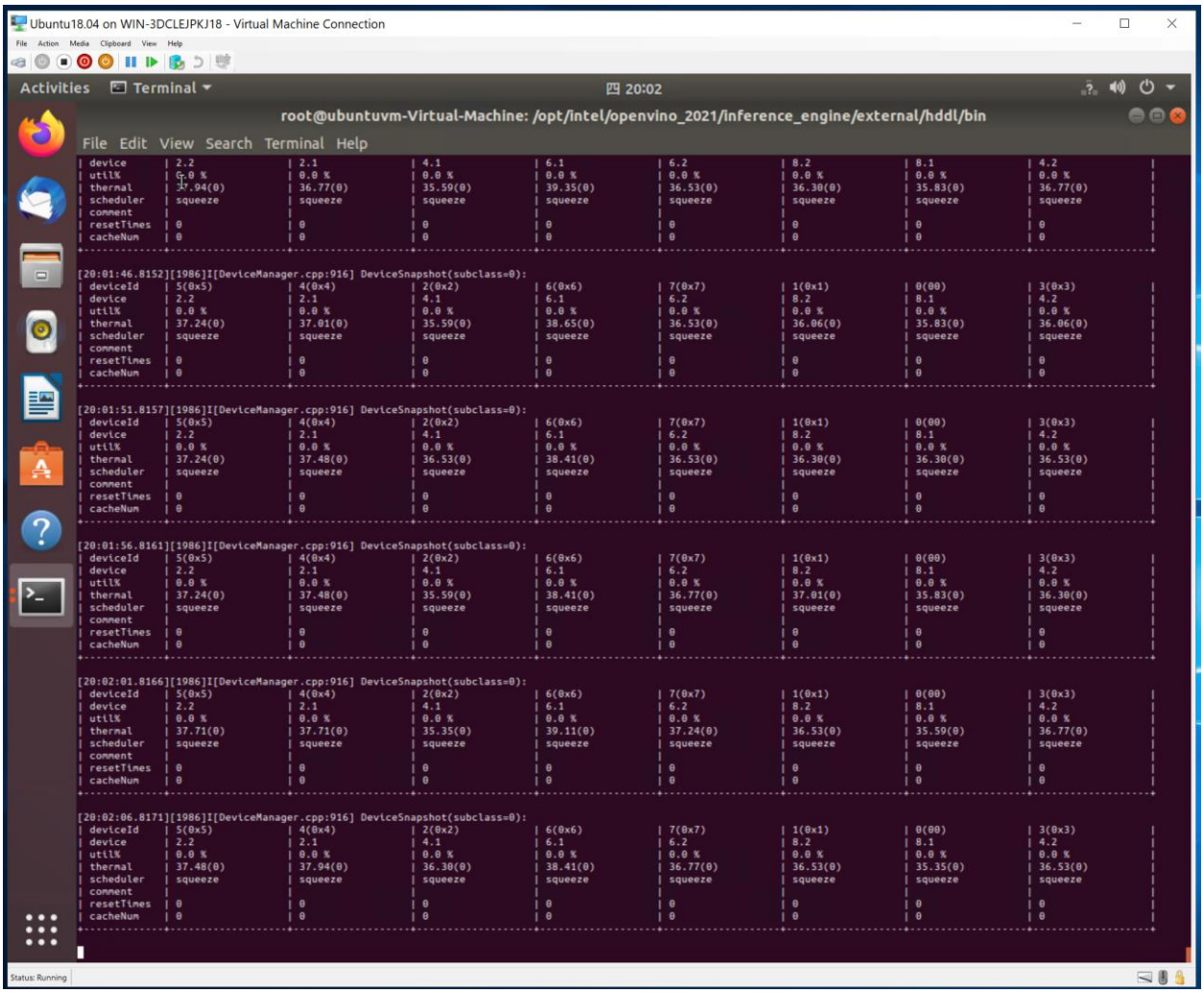


8. (Optional for Mustang-V100-MX8 Rev 1.0) Make sure the newly installed plugin works by invoking bsl_reset.

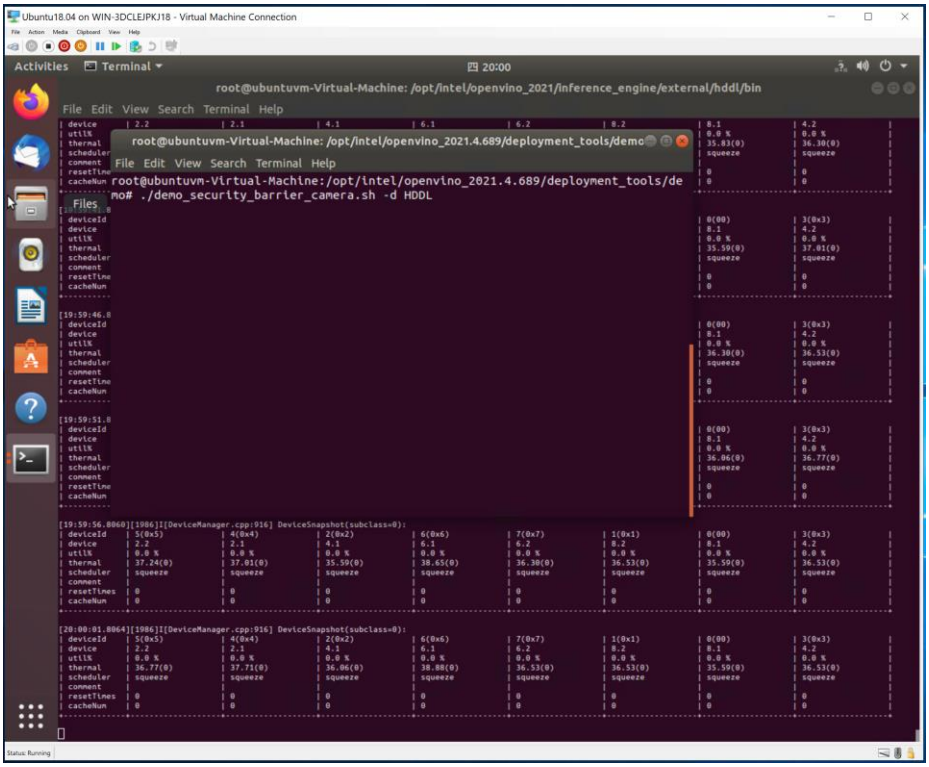


Executing OpenVINO sample applications with HDDL-R card

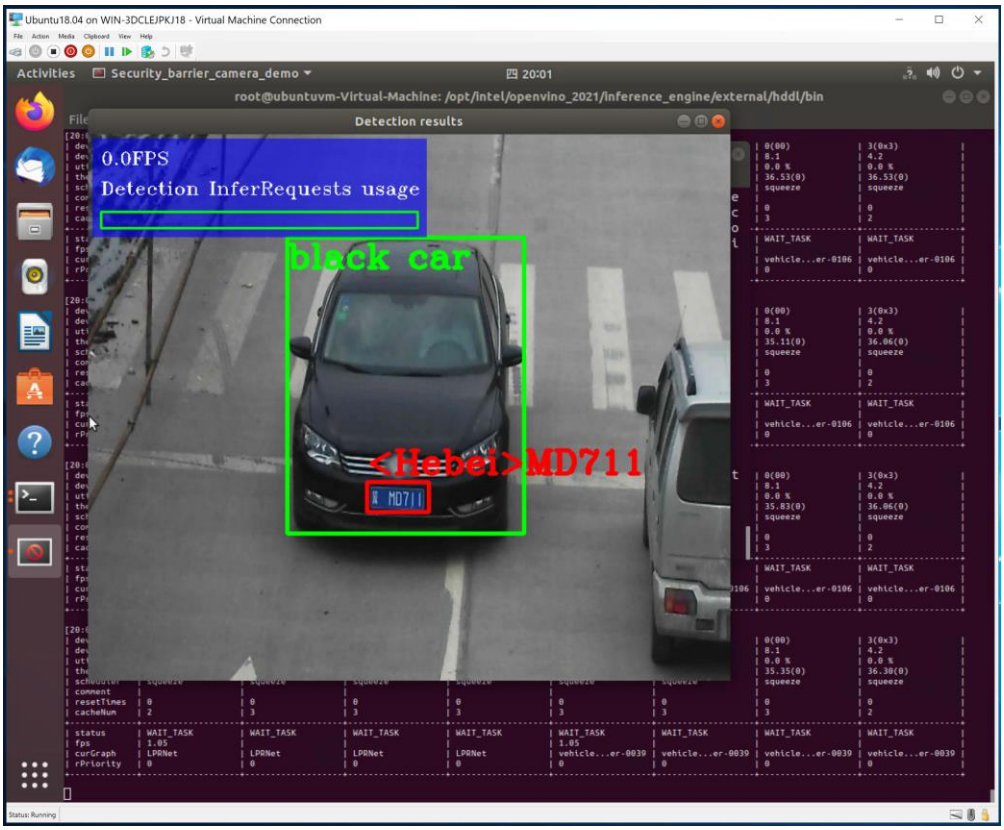
1. Initialize OpenVINO environment and start “hddldaemon”, verify it is working.



2. Run “demo_security_barrier_camera.sh -d HDDL”



3. Notice the hddldaemon print-out has CNN models loaded indicate HDDL-R is being utilized.



Shutting down VM and re-mount devices to host

1. After VM is being shut down, remove devices from VM using Remove-VMAssignableDevice.

```
Remove-VMAssignableDevice -locationpath "PCIROOT(0)#PCI(1D00)#PCI(0000)#PCI(0A00)#PCI(0000)" -VMName "Ubuntu18.04"

Remove-VMAssignableDevice -locationpath "PCIROOT(0)#PCI(1D00)#PCI(0000)#PCI(0300)#PCI(0000)" -VMName "Ubuntu18.04"

Remove-VMAssignableDevice -locationpath "PCIROOT(0)#PCI(1D00)#PCI(0000)#PCI(0B00)#PCI(0000)" -VMName "Ubuntu18.04"

Remove-VMAssignableDevice -locationpath "PCIROOT(0)#PCI(1D00)#PCI(0000)#PCI(0200)#PCI(0000)" -VMName "Ubuntu18.04"
```

2. Use “Mount-VMHostAssignableDevice” to return all dismounted devices to host.
3. Verify “ASMedia 3.0 USB Controller” are attached to host.