Xen VGA Passthrough to Windows 8 Consumer Preview 64-bit English HVM domU and Windows XP Home Edition SP3 HVM domU with Xen 4.2-unstable Changeset 25070 and Linux Kernel 3.3.0 in Ubuntu 11.10 oneiric ocelot amd64 Final Release Dom0

Version 1.4

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1 Preparing the USB Flash Drive to Extract VGA Card EEPROM

Reference Documentation URL #1: http://www.davidgis.fr/blog/index.php?2011/12/07/860-xen-42unstable-patches-for-vga-pass-through

Reference Documentation URL #2: http://wiki.xen.org/xenwiki/XenVGAPassthrough

```
wget http://www.davidgis.fr/download/nvflash_5.100.1_usb.iso.tar.bz2

tar xfvj nvflash_5.100.1_usb.iso.tar.bz2
```

Plug in your USB flash drive.

```
dmesg
```

In my case, the USB flash drive is detected as /dev/sdb.

```
mount | grep sdb
```

```
/dev/sdb1 on /media/C06F-905B type vfat (rw,nosuid,nodev,uid=1000,gid=1000,shortname=mixed,dmask=0077,utf8=1,showexec,flush,uhelper=udisks)
```

```
sudo umount /media/C06F-905B/
```

```
sudo dd if=nvflash_5.100.1_usb.iso of=/dev/sdb
```


Reboot your computer with the USB flash drive plugged in.

```
nvflash.exe –list (OPTIONAL)
nvflash.exe –save vgabios.rom
```

Unplug your USB flash drive. Reboot your computer back into Linux Xen Dom0. Plug in your USB flash drive again.

```
cp /media/LEXAR/VGABIOS.ROM /home/teo-en-ming/2nd-palit-nvidia-geforce-8400gs-vgabios.rom
```

2 Patching Xen 4.2-unstable Changeset 25070 for Xen VGA Passthrough

```
cd
hg clone http://xenbits.xen.org/xen-unstable.hg xen-unstable.hg-cs25070-vga-passthrough
cd xen-unstable.hg-cs25070-vga-passthrough
./configure
make world
make clean
```

Download Xen VGA Passthrough patches from David Techer's (Frenchman) website.

```
wget http://www.davidgis.fr/download/xen-4.2_rev24798_gfx-passthrough-patchs.tar.bz2
tar xfvj xen-4.2_rev24798_gfx-passthrough-patchs.tar.bz2
```

Patching Xen 4.2-unstable changeset 25070 source tree.

```
patch -p1 < xen-4.2_rev24798_gfx-passthrough-patchs/patch_Makefile
patch -p1 < xen-4.2_rev24798_gfx-passthrough-patchs/patch_dsdt.asl
patch -p1 < xen-4.2_rev24798_gfx-passthrough-patchs/patch_hvmloader.c
patch -p1 < xen-4.2_rev24798_gfx-passthrough-patchs/patch_rombios.c
patch -p1 < xen-4.2_rev24798_gfx-passthrough-patchs/patch_pci.c
patch -p1 < xen-4.2_rev24798_gfx-passthrough-patchs/patch_pass-through.c
```

3 Configuring MMIO BARS

```
lspci | grep VGA
```

```
01:00.0 VGA compatible controller: nVidia Corporation GT218 [GeForce 8400 GS] (rev a2)
```

```
dmesg | grep 01:00.0 | grep "pci.*mem"
```

```
[    0.120488] pci 0000:01:00.0: reg 10: [mem 0xd2000000-0xd2ffffff]
[    0.120508] pci 0000:01:00.0: reg 14: [mem 0xc0000000-0xcfffffff 64bit pref]
[    0.120528] pci 0000:01:00.0: reg 1c: [mem 0xd0000000-0xd1ffffff 64bit pref]
[    0.120556] pci 0000:01:00.0: reg 30: [mem 0xd3000000-0xd307ffff pref]
```


4 Calculating Differences

4.1 First Range

Maximum = 0xd2ffffff = 3539992575
Minimum = 0xd2000000 = 3523215360
Difference = Max – Min + 1 = 3539992575 – 3523215360 + 1 = 16777216 = 0x01000000

Hence,

Max = 0xD2FFFFFF
Min = 0xD2000000
Diff = 0x01000000

4.2 Second Range

Maximum = 0xcfffffff = 3489660927
Minimum = 0xc0000000 = 3221225472
Difference = Max – Min + 1 = 3489660927 – 3221225472 + 1 = 268435456 = 0x10000000

Hence,

Max = 0xCFFFFFFF
Min = 0xC0000000
Diff = 0x10000000

4.3 Third Range

Maximum = 0xd1ffffff = 3523215359
Minimum = 0xd0000000 = 3489660928
Difference = Max – Min + 1 = 3523215359 – 3489660928 + 1 = 33554432 = 0x02000000

Hence,

Max = 0xD1FFFFFF
Min = 0xD0000000
Diff = 0x02000000

5 Important Mathematical Tool (Online)

Link: http://easycalculation.com/hex-converter.php

6 Modifying tools/firmware/hvmloader/acpi/dsdt.asl

```
vi tools/firmware/hvmloader/acpi/dsdt.asl
```



```
            /* reserve MMIO BARs of gfx for 1:1 mapping */
            DWordMemory(
               ResourceProducer, PosDecode, MinFixed, MaxFixed,
               Cacheable, ReadWrite,
               0x00000000,
               0xD2000000,
               0xD2FFFFFF,
               0x00000000,
               0x01000000)

            DWordMemory(
               ResourceProducer, PosDecode, MinFixed, MaxFixed,
               NonCacheable, ReadWrite,
               0x00000000,
               0xC0000000,
               0xCFFFFFFF,
               0x00000000,
               0x10000000)

            DWordMemory(
               ResourceProducer, PosDecode, MinFixed, MaxFixed,
               Cacheable, ReadWrite,
               0x00000000,
               0xD0000000,
               0xD1FFFFFF,
               0x00000000,
               0x02000000)
```

7 Copying the VGA BIOS of Palit NVIDIA Geforce 8400 GS PCI-e x16

```
cp /home/teo-en-ming/2nd-palit-nvidia-geforce-8400gs-vgabios.rom
tools/firmware/vgabios/vgabios-pt.bin
hexdump -C tools/firmware/vgabios/vgabios-pt.bin | less
```

8 Building and Installing Xen 4.2-unstable Changeset 25070

```
make xen
make tools
make stubdom
sudo make install-xen
sudo make install-tools PYTHON_PREFIX_ARG=
sudo make install-stubdom
```


9 pciback (Not Using At All)

```
sudo nano /etc/grub.d/40_custom
```

```
menuentry 'Ubuntu 11.10 Release with Xen 4.1.3-rc1-pre and Kernel 3.3.0-xen-teo.en.ming-sgp'
--class gnu-linux --class gnu --class os {
        recordfail
        insmod part_msdos
        insmod ext2
        search --no-floppy --fs-uuid --set=root fd1ee157-7822-4a08-8549-56f4ae96f0dc
        set root='(/dev/sda,msdos1)'
        search --no-floppy --fs-uuid --set=root fd1ee157-7822-4a08-8549-56f4ae96f0dc
        multiboot /boot/xen.gz
        module /boot/vmlinuz-3.3.0-xen-teo.en.ming-sgp placeholder root=UUID=fd1ee157-7822-
4a08-8549-56f4ae96f0dc dom0_mem=1024 console=tty  quiet splash vt.handoff=7 xen-
pciback.hide=(01:00.0)
        module /boot/initrd.img-3.3.0-xen-teo.en.ming-sgp
}
```

```
sudo update-grub
```

10 XL Domain Configuration File for Windows 8 Consumer Preview 64-bit English HVM domU

```
# XL domain configuration file for Windows 8 Consumer Preview 64-bit English HVM domU
# Please refer to "man xl.cfg" for further explanations.
# See also docs/misc/xl-network-configuration.markdown and
# docs/misc/xl-disk-configuration.txt

# Written by Teo En Ming (Zhang Enming)
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# Date: 18 Mar 2012 Sun

name="Windows8ConsumerPreview64bitEnglish"
# Product Key:   DNJXJ-7XBW8-2378T-X22TX-BKG7J

builder="hvm"

vcpus=2

memory=2048

on_poweroff="destroy"
on_reboot="restart"
on_crash="destroy"
```



```
disk=[ 'format=raw, vdev=hda, access=rw, target=/etc/xen/images/windows8consumerpreview64-bitenglish.img', 'format=raw, vdev=hdc, access=ro, devtype=cdrom, target=/home/teo-en-ming/Downloads/Windows8-ConsumerPreview-64bit-English.iso' ]

vif=[ 'bridge=virbr0,type=ioemu,model=e1000' ]

#boot=[c|d|n]
#       Selects the emulated virtual device to boot from. Options are hard disk (c), cd-rom (d) or network/PXE (n).
#       Multiple options can be given and will be attempted in the order they are given. e.g. to boot from cd-rom
#       but fallback to the hard disk you can give dc. The default is cd.

boot="dc"

acpi=1

xen_platform_pci=1

viridian=1

stdvga=1

vnc=1
vnclisten="192.168.1.2"
vncdisplay=0
vncunused=1
vncpasswd=""
sdl=0

usb=1
usbdevice="tablet"

gfx_passthru=1

# VGA Passthrough Palit NVIDIA Geforce 8400 GS PCI Express x16 display card.
pci = [ '01:00.0' ]

# PCI Passthrough all the USB Controllers.
# pci = [ '00:1a.0','00:1a.1','00:1a.2','00:1a.7','00:1d.0','00:1d.1','00:1d.2','00:1d.7' ]
```


11 XL Domain Configuration File for Windows XP Home Edition SP3 HVM domU

```
# XL domain configuration file for Windows XP Home Edition SP3 HVM domU
# Please refer to "man xl.cfg" for further explanations.
# See also docs/misc/xl-network-configuration.markdown and
# docs/misc/xl-disk-configuration.txt

# Written by Teo En Ming (Zhang Enming)
# Email: teo.en.ming@gmail.com
# Mobile Phone: +65-8369-2618
# Country: Singapore
# Date: 18 Mar 2012 Sun

name="WindowsXPHomeEditionSP3"

builder="hvm"

vcpus=2

memory=1024

on_poweroff="destroy"
on_reboot="restart"
on_crash="destroy"

disk=[ 'format=raw, vdev=hda, access=rw, target=/var/lib/libvirt/images/Windows-XP-Home-Edition.img' ]

vif=[ 'bridge=virbr0,type=ioemu,model=rtl8139' ]

#boot=[c|d|n]
#       Selects the emulated virtual device to boot from. Options are hard disk (c), cd-rom (d) or network/PXE (n).
#       Multiple options can be given and will be attempted in the order they are given. e.g. to boot from cd-rom
#       but fallback to the hard disk you can give dc. The default is cd.

boot="dc"

acpi=1

xen_platform_pci=1

viridian=1

stdvga=1

vnc=1
```



```
vnclisten="192.168.1.2"
vncdisplay=1
vncunused=1
vncpasswd=""
sdl=0

usb=1
usbdevice="tablet"

gfx_passthru=1

# VGA Passthrough Palit NVIDIA Geforce 8400 GS PCI Express x16 display card.
pci = [ '01:00.0' ]

# PCI Passthrough all the USB Controllers.
# pci = [ '00:1a.0','00:1a.1','00:1a.2','00:1a.7','00:1d.0','00:1d.1','00:1d.2','00:1d.7' ]
```

12 pci-stub

Prevents nouveau kernel module/vga driver from loading.

```
sudo nano /etc/modprobe.d/blacklist.conf
```

```
blacklist nouveau
```

Uninstall the lightdm display manager. Previous versions of Ubuntu uses gdm.

```
sudo apt-get remove lightdm
```

Reboot your computer.

```
sudo reboot
```

```
ps -ef | grep lightdm
ps -ef | grep X
lsmod | grep nouveau
```

Load the pci_stub module.

```
sudo modprobe pci-stub
```

```
lsmod | grep pci_stub
```

Palit NVIDIA Geforce 8400 GS PCI Express x16 VGA card

```
lspci | grep VGA
```



```
lspci -n | grep "01:00.0"
```

```
01:00.0 0300: 10de:10c3 (rev a2)
```

Create a shell script to start Windows HVM domU.

```
cd
nano start-windows
```

```
#!/bin/sh
set -x
sudo chmod o+w /sys/bus/pci/drivers/pci-stub/new_id
sudo chmod o+w /sys/bus/pci/devices/0000:01:00.0/driver/unbind
sudo chmod o+w /sys/bus/pci/drivers/pci-stub/bind
echo "10de 10c3" > /sys/bus/pci/drivers/pci-stub/new_id
echo "0000:01:00.0" > /sys/bus/pci/devices/0000:01:00.0/driver/unbind
echo "0000:01:00.0" > /sys/bus/pci/drivers/pci-stub/bind
#sudo xl create /etc/xen/WindowsXPHomeEditionSP3
sudo xl create /etc/xen/Windows8ConsumerPreview64bitEnglish
```

```
sudo chmod +x start-windows
```

Execute the following start-windows shell script.

```
./start-windows
```

13 Checking Whether Intel VT-d is Enabled

```
sudo xl dmesg | grep 'I/O virtualisation'
```

```
(XEN) I/O virtualisation enabled
```


14 Xen Logs in /var/log/xen

14.1 qemu-dm-Windows8ConsumerPreview64bitEnglish.log

```
domid: 1
Strip off blktap sub-type prefix to /etc/xen/images/windows8consumerpreview64-bitenglish.img (drv 'aio')
Using file /etc/xen/images/windows8consumerpreview64-bitenglish.img in read-write mode
Strip off blktap sub-type prefix to /home/teo-en-ming/Downloads/Windows8-ConsumerPreview-64bit-English.iso (drv 'aio')
Using file /home/teo-en-ming/Downloads/Windows8-ConsumerPreview-64bit-English.iso in read-only mode
Watching /local/domain/0/device-model/1/logdirty/cmd
Watching /local/domain/0/device-model/1/command
Watching /local/domain/1/cpu
qemu_map_cache_init nr_buckets = 10000 size 4194304
shared page at pfn feffd
buffered io page at pfn feffb
Guest uuid = eb9aa557-f2d4-473f-a01b-9b235399f235
Register xen platform.
Done register platform.
platform_fixed_ioport: changed ro/rw state of ROM memory area. now is rw state.
xs_read(/local/domain/0/device-model/1/xen_extended_power_mgmt): read error
medium change watch on `hdc' (index: 1): aio:/home/teo-en-ming/Downloads/Windows8-ConsumerPreview-64bit-English.iso
I/O request not ready: 0, ptr: 0, port: 0, data: 0, count: 0, size: 0
Log-dirty: no command yet.
I/O request not ready: 0, ptr: 0, port: 0, data: 0, count: 0, size: 0
vcpu-set: watch node error.
xs_read(/local/domain/1/log-throttling): read error
qemu: ignoring not-understood drive `/local/domain/1/log-throttling'
medium change watch on `/local/domain/1/log-throttling' - unknown device, ignored
dm-command: hot insert pass-through pci dev
register_real_device: Assigning real physical device 01:00.0 ...
pt_iomul_init: Error: pt_iomul_init can't open file /dev/xen/pci_iomul: No such file or directory: 0x1:0x0.0x0
pt_register_regions: IO region registered (size=0x01000000 base_addr=0xd2000000)
pt_register_regions: IO region registered (size=0x10000000 base_addr=0xc000000c)
pt_register_regions: IO region registered (size=0x02000000 base_addr=0xd000000c)
pt_register_regions: IO region registered (size=0x00000080 base_addr=0x0000d001)
pt_register_regions: Expansion ROM registered (size=0x00080000 base_addr=0xd3000002)
setup_vga_pt: vga bios checksum is adjusted!
pt_msi_setup: msi mapped with pirq 37
pci_intx: intx=1
register_real_device: Real physical device 01:00.0 registered successfuly!
IRQ type = MSI-INTx
pt_bar_reg_read: first read BARs of gfx
pt_iomem_map: e_phys=d2000000 maddr=d2000000 type=0 len=16777216 index=0 first_map=1
pt_bar_reg_read: first read BARs of gfx
```



```
pt_iomem_map: e_phys=c0000000 maddr=c0000000 type=8 len=268435456 index=1 first_map=1
pt_bar_reg_read: first read BARs of gfx
pt_bar_reg_read: first read BARs of gfx
pt_iomem_map: e_phys=d0000000 maddr=d0000000 type=8 len=33554432 index=3 first_map=1
pt_bar_reg_read: first read BARs of gfx
pt_bar_reg_read: first read BARs of gfx
pt_ioport_map: e_phys=d000 pio_base=d000 len=128 index=5 first_map=1
platform_fixed_ioport: changed ro/rw state of ROM memory area. now is rw state.
platform_fixed_ioport: changed ro/rw state of ROM memory area. now is ro state.
pt_pci_read_config: [00:05:0] Error: Failed to read register with invalid access size alignment.
[Offset:0eh][Length:4]
pt_pci_read_config: [00:05:0] Error: Failed to read register with invalid access size alignment.
[Offset:0eh][Length:4]
pt_pci_read_config: [00:05:0] Error: Failed to read register with invalid access size alignment.
[Offset:0eh][Length:4]
pt_pci_read_config: [00:05:0] Error: Failed to read register with invalid access size alignment.
[Offset:0eh][Length:4]
pt_pci_read_config: [00:05:0] Error: Failed to read register with invalid access size alignment.
[Offset:0eh][Length:4]
pt_pci_read_config: [00:05:0] Error: Failed to read register with invalid access size alignment.
[Offset:0eh][Length:4]
pt_pci_read_config: [00:05:0] Error: Failed to read register with invalid access size alignment.
[Offset:0eh][Length:4]
pt_iomem_map: e_phys=ffffffff maddr=d2000000 type=0 len=16777216 index=0 first_map=0
pt_iomem_map: e_phys=ffffffff maddr=c0000000 type=8 len=268435456 index=1 first_map=0
pt_iomem_map: e_phys=ffffffff maddr=d0000000 type=8 len=33554432 index=3 first_map=0
pt_ioport_map: e_phys=ffff pio_base=d000 len=128 index=5 first_map=0
pt_iomem_map: e_phys=d2000000 maddr=d2000000 type=0 len=16777216 index=0 first_map=0
pt_iomem_map: e_phys=c0000000 maddr=c0000000 type=8 len=268435456 index=1 first_map=0
pt_iomem_map: e_phys=d0000000 maddr=d0000000 type=8 len=33554432 index=3 first_map=0
pt_ioport_map: e_phys=d000 pio_base=d000 len=128 index=5 first_map=0
pt_iomem_map: e_phys=ffffffff maddr=d2000000 type=0 len=16777216 index=0 first_map=0
pt_iomem_map: e_phys=ffffffff maddr=c0000000 type=8 len=268435456 index=1 first_map=0
pt_iomem_map: e_phys=ffffffff maddr=d0000000 type=8 len=33554432 index=3 first_map=0
pt_ioport_map: e_phys=ffff pio_base=d000 len=128 index=5 first_map=0
pt_iomem_map: e_phys=d2000000 maddr=d2000000 type=0 len=16777216 index=0 first_map=0
pt_iomem_map: e_phys=c0000000 maddr=c0000000 type=8 len=268435456 index=1 first_map=0
pt_iomem_map: e_phys=d0000000 maddr=d0000000 type=8 len=33554432 index=3 first_map=0
pt_ioport_map: e_phys=d000 pio_base=d000 len=128 index=5 first_map=0
```

14.2 qemu-dm-WindowsXPHomeEditionSP3.log

```
domid: 6
config qemu network with xen bridge for  tap6.0 virbr0
Using file /var/lib/libvirt/images/Windows-XP-Home-Edition.img in read-write mode
Using file /dev/sr1 in read-only mode
qemu: could not open vbd '/local/domain/0/backend/vbd/6/5632/mode' or hard disk image '/dev/sr1'
(drv 'phy' format 'raw')
Watching /local/domain/0/device-model/6/logdirty/cmd
Watching /local/domain/0/device-model/6/command
Watching /local/domain/6/cpu
char device redirected to /dev/pts/1
qemu_map_cache_init nr_buckets = 10000 size 4194304
shared page at pfn feffd
buffered io page at pfn feffb
Guest uuid = 54c425b9-46b7-c666-9409-2f1752ec944b
Time offset set 0
char device redirected to /dev/pts/2
xen be: console-0: xen be: console-0: initialise() failed
initialise() failed
populating video RAM at ff000000
mapping video RAM from ff000000
Register xen platform.
Done register platform.
platform_fixed_ioport: changed ro/rw state of ROM memory area. now is rw state.
xs_read(/local/domain/0/device-model/6/xen_extended_power_mgmt): read error
xs_read(): vncpasswd get error. /vm/54c425b9-46b7-c666-9409-2f1752ec944b/vncpasswd.
medium change watch on `hdc' (index: 1): /dev/sr1
I/O request not ready: 0, ptr: 0, port: 0, data: 0, count: 0, size: 0
Log-dirty: no command yet.
I/O request not ready: 0, ptr: 0, port: 0, data: 0, count: 0, size: 0
xen be: console-0: xen be: console-0: initialise() failed
initialise() failed
vcpu-set: watch node error.
xen be: console-0: xen be: console-0: initialise() failed
initialise() failed
xs_read(/local/domain/6/log-throttling): read error
qemu: ignoring not-understood drive `/local/domain/6/log-throttling'
medium change watch on `/local/domain/6/log-throttling' - unknown device, ignored
xen be: console-0: xen be: console-0: initialise() failed
initialise() failed
cirrus vga map change while on lfb mode
mapping vram to f0000000 - f0400000
platform_fixed_ioport: changed ro/rw state of ROM memory area. now is rw state.
platform_fixed_ioport: changed ro/rw state of ROM memory area. now is ro state.
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
```



```
oss: Reason: No such file or directory
audio: Failed to create voice `es1370.dac2'
oss: Could not initialize ADC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize ADC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
audio: Failed to create voice `es1370.adc'
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
audio: Failed to create voice `es1370.dac1'
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
audio: Failed to create voice `es1370.dac1'
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
audio: Failed to create voice `es1370.dac2'
oss: Could not initialize ADC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize ADC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
audio: Failed to create voice `es1370.adc'
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
audio: Failed to create voice `es1370.dac1'
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
```



```
audio: Failed to create voice `es1370.dac1'
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
audio: Failed to create voice `es1370.dac1'
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
oss: Could not initialize DAC
oss: Failed to open `/dev/dsp'
oss: Reason: No such file or directory
audio: Failed to create voice `es1370.dac1'
Time offset set -1, added offset -1
shutdown requested in cpu_handle_ioreq
Issued domain 6 poweroff
```

15 Passthrough USB Keyboard and USB Mouse to Windows HVM domU

List your USB devices.

```
lsusb
```

```
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 003 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 004 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 005 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 006 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 007 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 008 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 001 Device 002: ID 2040:2400 Hauppauge WinTV PVR USB2 (Model 24019)
Bus 001 Device 003: ID 0409:005a NEC Corp. HighSpeed Hub
Bus 006 Device 002: ID 0603:00f2 Novatek Microelectronics Corp.
Bus 008 Device 002: ID 15d9:0a41 Trust International B.V. MI-2540D [Optical mouse]
```

On the QEMU console, execute the following commands.

Passthrough USB Keyboard.

```
usb_add host:0603:00f2
```

Passthrough USB Mouse.

```
usb_add host:15d9:0a41
```


16 Reverting Back to lightdm Display Manager

```
sudo reboot
sudo apt-get install lightdm
sudo service lightdm start
```

17 PCI Passthrough the USB Controllers to Windows HVM domU

```
lspci
```

```
00:00.0 Host bridge: Intel Corporation 4 Series Chipset DRAM Controller (rev 03)
00:01.0 PCI bridge: Intel Corporation 4 Series Chipset PCI Express Root Port (rev 03)
00:03.0 Communication controller: Intel Corporation 4 Series Chipset HECI Controller (rev 03)
00:19.0 Ethernet controller: Intel Corporation 82567LM-3 Gigabit Network Connection (rev 02)
00:1a.0 USB Controller: Intel Corporation 82801JD/DO (ICH10 Family) USB UHCI Controller #4 (rev 02)
00:1a.1 USB Controller: Intel Corporation 82801JD/DO (ICH10 Family) USB UHCI Controller #5 (rev 02)
00:1a.2 USB Controller: Intel Corporation 82801JD/DO (ICH10 Family) USB UHCI Controller #6 (rev 02)
00:1a.7 USB Controller: Intel Corporation 82801JD/DO (ICH10 Family) USB2 EHCI Controller #2 (rev 02)
00:1b.0 Audio device: Intel Corporation 82801JD/DO (ICH10 Family) HD Audio Controller (rev 02)
00:1d.0 USB Controller: Intel Corporation 82801JD/DO (ICH10 Family) USB UHCI Controller #1 (rev 02)
00:1d.1 USB Controller: Intel Corporation 82801JD/DO (ICH10 Family) USB UHCI Controller #2 (rev 02)
00:1d.2 USB Controller: Intel Corporation 82801JD/DO (ICH10 Family) USB UHCI Controller #3 (rev 02)
00:1d.7 USB Controller: Intel Corporation 82801JD/DO (ICH10 Family) USB2 EHCI Controller #1 (rev 02)
00:1e.0 PCI bridge: Intel Corporation 82801 PCI Bridge (rev a2)
00:1f.0 ISA bridge: Intel Corporation 82801JDO (ICH10DO) LPC Interface Controller (rev 02)
00:1f.2 IDE interface: Intel Corporation 82801JD/DO (ICH10 Family) 4-port SATA IDE Controller (rev 02)
00:1f.3 SMBus: Intel Corporation 82801JD/DO (ICH10 Family) SMBus Controller (rev 02)
00:1f.5 IDE interface: Intel Corporation 82801JD/DO (ICH10 Family) 2-port SATA IDE Controller (rev 02)
01:00.0 VGA compatible controller: nVidia Corporation GT218 [GeForce 8400 GS] (rev a2)
01:00.1 Audio device: nVidia Corporation High Definition Audio Controller (rev a1)
02:01.0 FireWire (IEEE 1394): Agere Systems FW322/323 (rev 70)
```

```
sudo nano /etc/grub.d/40_custom
```

```
menuentry 'Ubuntu 11.10 Release with Xen 4.1.3-rc1-pre and Kernel 3.3.0-xen-teo.en.ming-sgp'
--class gnu-linux --class gnu --class os {
        recordfail
        insmod part_msdos
        insmod ext2
        search --no-floppy --fs-uuid --set=root fd1ee157-7822-4a08-8549-56f4ae96f0dc
        set root='(/dev/sda,msdos1)'
        search --no-floppy --fs-uuid --set=root fd1ee157-7822-4a08-8549-56f4ae96f0dc
        multiboot /boot/xen.gz
        module /boot/vmlinuz-3.3.0-xen-teo.en.ming-sgp placeholder root=UUID=fd1ee157-7822-
4a08-8549-56f4ae96f0dc dom0_mem=1024 console=tty  quiet splash vt.handoff=7 xen-
pciback.hide=(00:1a.0)(00:1a.1)(00:1a.2)(00:1a.7)(00:1d.0)(00:1d.1)(00:1d.2)(00:1d.7)
        module /boot/initrd.img-3.3.0-xen-teo.en.ming-sgp
}
```

```
sudo update-grub
```



```
sudo reboot
```

Please note that your USB keyboard and USB mouse will not work after rebooting. Hence it is not advisable to use this method to passthrough your USB controllers to Windows HVM domU because ALL the USB controllers have been hidden from domain 0 as shown above. Of course, you can choose not to hide all the USB controllers from dom0.

18 Opening Firewall Port for VNC Server in dom0 for Xen VGA Passthrough

/etc/shorewall/rules

```
# Allows VNC viewer connection to VNC Server in dom0 for Xen VGA Passthrough (QEMU monitor only)
ACCEPT          net             $FW             tcp     5900
```

