

VMware Esxi部署Win7 VM 配置M6 GPU Passthrough(vDGA)模式, 添加PCI GPU后Win7 VM 无法开机。

NVIDIA Tesla GPU有两种工作模式: 计算模式(compute mode)和图形模式(graphics mode), 默认为计算模式。

计算模式(compute mode): 用作高性能运算(HPC)。

图形模式(graphics mode): 用作图形显示卡, 当使用GPU做为显卡功能时需要切换到此模式。

另外再以下场景需要切换到图形模式:

1. 不支持large BARs的虚拟化平台GPU直通给VM使用时, 例如: Citrix XenServer 6.2, 6.5, VMware ESXi 5.1, 5.5, 6.0, Red Hat Enterprise Linux 7.0, 7.1
2. Xen和KVM虚拟化平台GPU直通给Windows虚拟机
3. 做为GRID 虚拟GPU(vGPU)部署
4. VMware部署GPU工作模式为vSGA

使用gpumodeswitch工具切换GPU工作模式, 目前该工具支持以下环境使用:

1. Windows 64-bit 命令行
2. Linux 32/64-bit 命令行(包括Citrix XenServer dom0)
3. VMware ESXi命令行
4. 可引导镜像直接引导启动服务器

从NVIDIA官网下载NVIDIA-gpumodeswitch-xxxx.zip工具包含以下文件

文件名称	描述
gpumodeswitch.exe	Windows下可执行程序
nvflsh64.sys	Windows 64位驱动文件
gpumodeswitch	Linux下可执行程序, 包含XenServer dom0
NVIDIA-GpuModeSwitch-xxxxxxx.x86_64.vib	vSphere安装包(VMware Esxi下安装程序)
gpumodeswitch.iso	可制作引导Linux内核ISO镜像
gpumodeswitch.zip	可制作引导Linux内核USB镜像

举例说明Linux内核下命令行模式操作步骤:

```
# gpumodeswitch --gputype graphics
NVIDIA GPU Mode Switch Utility Version 1.02
Copyright (C) 2015, NVIDIA Corporation. All Rights Reserved.
Update GPU Mode of all adapters to "graphics"?
Press & #39;y& #39; to confirm or & #39;n& #39; to choose adapters or any other key to abort:
y
Updating GPU Mode of all eligible adapters to "graphics"
PLX (8747h) (10B5,8747,10B5,8747) H:--:NRM S:00,B:81,PCI,D:00,F:00
Adapter: PLX (8747h) (10B5,8747,10B5,8747) H:--:NRM S:00,B:81,PCI,D:00,F:00
Identifying EEPROM...
EEPROM ID (47,8747) : uChip 25AA320A 1.8-5.5V 4Kx8S, page
Cannot set GPU mode for this adapter
Tesla M60 (10DE,13F2,10DE,113A) H:82:SP8 S:00,B:83,PCI,D:00,F:00
Adapter: Tesla M60 (10DE,13F2,10DE,113A) H:82:SP8 S:00,B:83,PCI,D:00,F:00
Identifying EEPROM...
EEPROM ID (EF,3013) : WBond W25X40A 2.7-3.6V 4096Kx1S, page
Programming UPR setting for requested mode..
License image updated successfully.
Programming ECC setting for requested mode..
The display may go *BLANK* on and off for up to 10 seconds or more during the update process depending on your display adapter and output device.
Identifying EEPROM...
EEPROM ID (EF,3013) : WBond W25X40A 2.7-3.6V 4096Kx1S, page
NOTE: Preserving straps from original image.
Clearing original firmware image...
Storing updated firmware image...
.....
Verifying update...
Update successful.
```

Firmware image has been updated from version 84.04.7C.00.00 to 84.04.7C.00.00.
A reboot is required for the update to take effect.
InfoROM image updated successfully.
Tesla M60 (10DE,13F2,10DE,113A) H:82:SP16 S:00,B:84,PCI,D:00,F:00
Adapter: Tesla M60 (10DE,13F2,10DE,113A) H:82:SP16 S:00,B:84,PCI,D:00,F:00
Identifying EEPROM...
EEPROM ID (EF,3013) : WBond W25X40A 2.7-3.6V 4096Kx1S, page
Programming UPR setting for requested mode..
License image updated successfully.
Programming ECC setting for requested mode..
The display may go *BLANK* on and off for up to 10 seconds or more during the update process depending on your display adapter and output device.
Identifying EEPROM...
EEPROM ID (EF,3013) : WBond W25X40A 2.7-3.6V 4096Kx1S, page
NOTE: Preserving straps from original image.
Clearing original firmware image...
Storing updated firmware image...
.....
Verifying update...
Update successful.
Firmware image has been updated from version 84.04.7C.00.00 to 84.04.7C.00.00.
A reboot is required for the update to take effect.
InfoROM image updated successfully.
如果需要切换全部GPU并不需要交互确认, 可以使用以下命令:
gpumodeswitch --gpumode graphics --auto

另外如果是VMware环境, 可以在以下日志中确认当前GPU的工作模式:

```
VM-support日志\commands\lspci_-v.txt:  
0000:8a:00.0 3D controller Display controller:  
Class 0302: 10de:13f3  
0000:8d:00.0 3D controller Display controller:  
Class 0302: 10de:13f3
```

```
0302: The GPU is in "compute" mode.  
0300: The GPU is in "graphics" mode.
```