

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
nvflash64.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 --gpumode 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:--:NRMS:00,B:81,PCI,D:00,F:00
Adapter: PLX (8747h) (10B5,8747,10B5,8747) H:--:NRMS: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.