S3355 - Hands on Tutorial: Deploying GRID in Citrix and VMware Virtual Desktop Environments

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VIRTUAL DESKTOPS

VIRTUAL MACHINE

Windows 7

Apps

NVIDIA GRID Enabled Virtual Desktop

NVIDIA Driver

NVIDIA GRID ENABLED Hypervisor

NVIDIA GRID GPU
GPU Pass-Through

Accelerated Capture
• Citrix XenDesktop 5.6 FP1
• View 5.2 (Feb 2013) Kepler HW Encoding
  • TBD

NVIDIA Pass-through
• XenServer 6
• ESX 5.1
• KVM coming soon
• Xen open source
Citrix XenServer

Customize System

Status Display
Network and Management Interface
Authentication
Virtual Machines
Disks and Storage Repositories
Resource Pool Configuration
Hardware and BIOS Information
Keyboard and Timezone
Remote Service Configuration
Backup, Restore and Update
Technical Support
Reboot or Shutdown
Local Command Shell
Quit

<Enter> OK  <Up/Down> Select

XenServer 6.0.2-53456p

Management Network Parameters

Device  eth0
IP address  10.19.114.169
Netmask  255.255.255.0
Gateway  10.19.114.1

Press <Enter> to display the SSL key fingerprints for this host

<Enter> Fingerprint  <F5> Refresh
Citrix XenCenter

Structure:
- Active Directory machine
- Broker machine with XenDesktop Studio
- VMs with XenTools and XenDesktop View agent
Create VMs
Win 7 VMs with XenDesktop

Contains XenDesktop View Agent
NV Win 7 driver

NOTE: When the Windows VM has access the NV GPU, the XenCenter Console is no longer able to display

MS RDP disables GPU acceleration

Install something like UltraVNC to remotely access the VM and also allow for GPU acceleration to be tested.
Win 7 VMs with XenDesktop

Install XenDesktop Virtual Agent

Apply HDX 3DPro key if you want GPU pass thru

Choose just Virtual Desktop Agent for basic VDI machines

Point the machine to the Broker Machine
Win 7 VMs with XenDesktop

Shutdown the VM after initial creation.

Right click on the VM name in the XenCenter console

Go to the Properties tab and select GPU

A drop list of available devices that can be pass thru are listed.
Win 7 VMs with XenDesktop

Restart the VM after GPU pass thru selection

Download the drivers at www.nvidia.com

GRID drivers “today” are at the bottom of the page and not on the drop down.

Install the driver

Some components of driver installation are not needed. IE.. 3d Vision Driver for Stereo. But if installed they don’t cause any issues.
Client machines that will access the VMs


Client is available for various platforms
- Windows PC
- Android
- iOS
Once the client device has Citrix Receiver installed, point the web browser to the FDQN or IP address of the Broker Machine.
Accessing the Citrix XDT VMs

Remote Sessions launch in a separate window.
Accessing the Citrix XDT VMs

Citrix Receiver control panel
Citrix Image Control settings
Device Manager with NV GPU passed thru
Accessing the Citrix XDT VMs

Fully accelerated Open GL and DX apps can be run.

NVidia Control Panel is also available for graphics adapter settings.

CUDA capable programs can be run with full GPU acceleration.
Tablet access via Citrix Receiver from App Store
GPU Sharing

- Virtual Driver
- Virtual Driver
- Virtual Driver
- Virtual Driver
- Virtual Graphics Driver

**VIRTUAL MACHINE**

- vCPU
- vMemory
- vStorage
- vNetwork
- vGraphics

**HYPervisor**

**Server**

- CPU
- Memory
- Storage
- Network
- GPU

**Software**

- Guest OS
- App
- App
- App
- VDA

**RemoteFX**

- Microsoft Server 2008 R2 - DX9
- Microsoft Server 2012 - DX9, 10, 11
- VMware vSGA (Feb 2013) - DX9, OGL2.1

**Client**

- NVIDIA Driver

**GPU Technology Conference**

- GRID K1, K2
- Quadro 4000, 5000, 6000
- Tesla M2070Q
VMWare ESXi + VMWare View

VMWare ESXi 5.1.0 (VMKernel DEFA Build 1586752)

2 x Intel(R) Xeon(R) CPU X5670 @ 2.93GHz
48 GiB Memory

Download tools to manage this host from:
http://sw03/  
http://sw02:115.24/ (STATIC)  

Troubleshooting Mode Options
- Disable ESXi Shell
- Disable SSH
- Modify ESXi Shell and SSH timeouts
- Restart Management Agents
VMWare vSGA setup

VMWare to provide NVIDIA *.vib driver

```
esxcli software vib install --no-sig-check -v <driver file>.vib
```

Start xorg Service

```
/etc/init.d/xorg start
```

- Supports OGL 2.1 and DX 9.0
- Is an API intercept model.
- Has shared access to NV GPU
- Driver is installed on the ESX hypervisor
vSGA (Virtual Shared Graphics Adapter)
VMWare sVGA Setup

After initial create of VM in Vsphere the GRID GPU needs to be enabled:
VMWare sVGA Setup

Device Manager should say VMWare SVGA 3D
Can be confirmed with an SDK
DX app
VMware View Windows and Android/iOS client
vDGA (Virtual Dedicated Graphics Adaptor) setup

- Enabling Pass thru on ESX
  - Reboot of ESX host required
VMWare vDGA setup

Enabling Pass thru on ESX

~# vmkvsitools lspci | grep 'NVIDIA'
00:04:00.0 Display controller: NVIDIA Corporation
00:05:00.0 Display controller: NVIDIA Corporation
VMWare vDGA setup

• After VMWare Tools installation
• NVIDIA Win7 driver can be installed and GRID GPU is seen.
Vmware vDGA Setup