

# A LONG TIME AGO IN A DATACENTER FAR, FAR AWAY...

## Episode IV A NEW HOPE

*It is a period of civil war in companies all over the world. Rebel server admins, striking from a hidden datacenter, have won their first victory against the evil Help Desk.*

*During the battle, Rebel spies managed to steal secret plans to the Help Desk's ultimate weapon, the DEATH TOP, an armored work station that consumes enough power to destroy the entire planet.*

*Pursued by the Help Desk's sinister agents, Princess Leia races to her cubical and her BYOD*



**VCE**

AS THE W



ORLD TURNS...

ON YOUR DESKTOP

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# DURING THIS SESSION

Vocabulary

Software Based 3D Graphics

- What is Soft 3D
- Why Soft 3D
- Enable and Configure

Limitations of Soft 3D

Alternatives to Soft 3D

Sizing Considerations for Soft 3D



# VOCABULARY

## SVGA, Soft 3D, VMware SVGA 3D

- Software based 3D Graphics
- Super Video Graphics Array Software 3D Renderer
- VMware WDDM (Windows Display Driver Model) 1.1-compliant driver

## vSGA

- Shared Hardware
- Virtual Shared Graphics Acceleration
- Multiple virtual machines leverage physical GPUs installed locally in the ESXi hosts to provide hardware-accelerated 3D graphics to multiple virtual desktops

## vDGA

- Dedicated Hardware
- Virtual Dedicated Graphics Acceleration
- Graphics acceleration capability provided by VMware ESXi™ for high-end workstation graphics where a discrete GPU is needed



# WHAT IS SOFT 3D

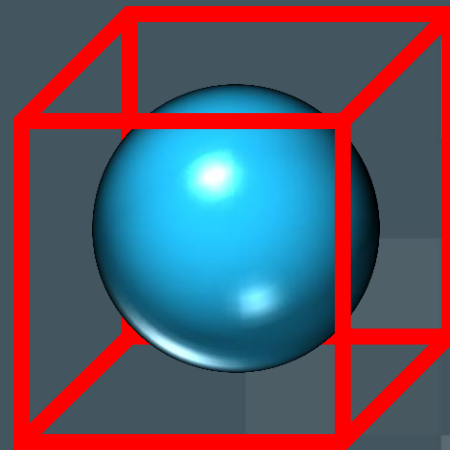
## 3D Graphics Rendering

### Software Based

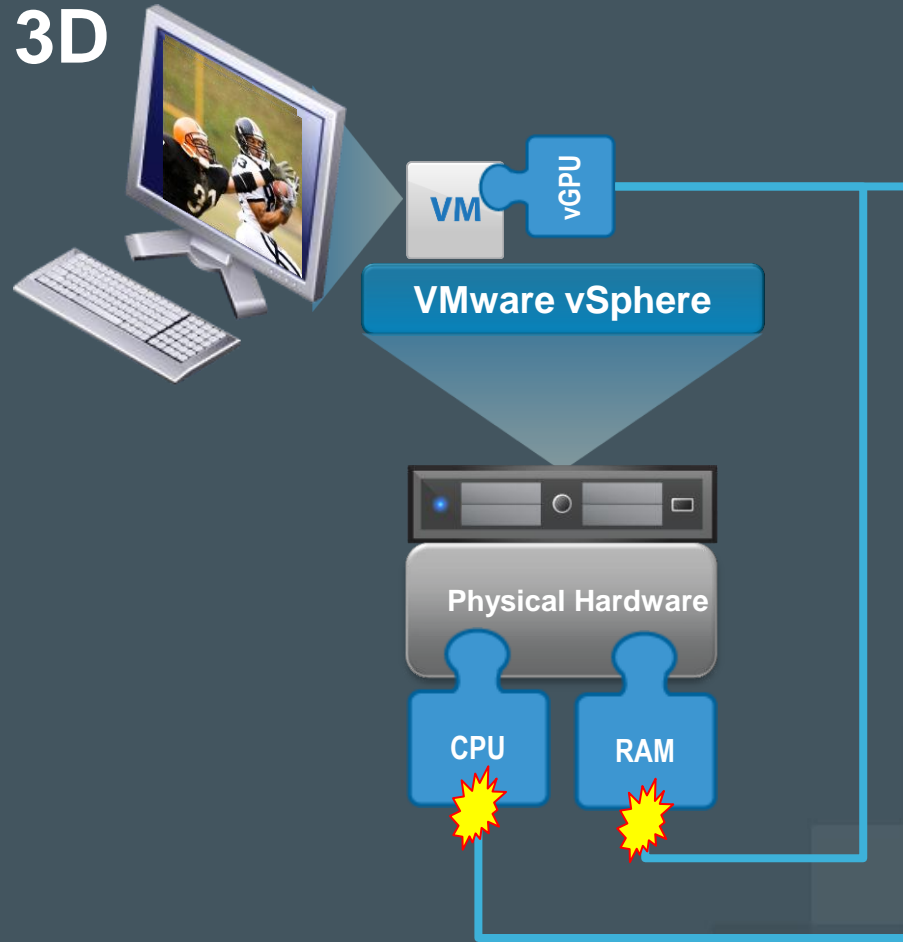
- VMware WDDM (Windows Display Driver Model) 1.1-compliant driver

### Uses Existing Hardware

- CPU
- RAM



# WHAT IS SOFT 3D



# WHY SOFT 3D

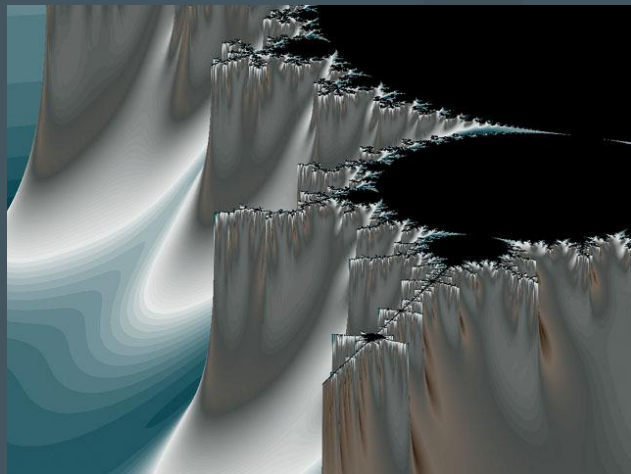
## The Great Divide

- Physical Vs. Virtual
- Enables a Graphically Rich Experience

## Newer apps and OS's need 3D

- Microsoft Aero
- Google Earth
- HTML 5 / Web 3D

## Allows Move to Hardware GPU



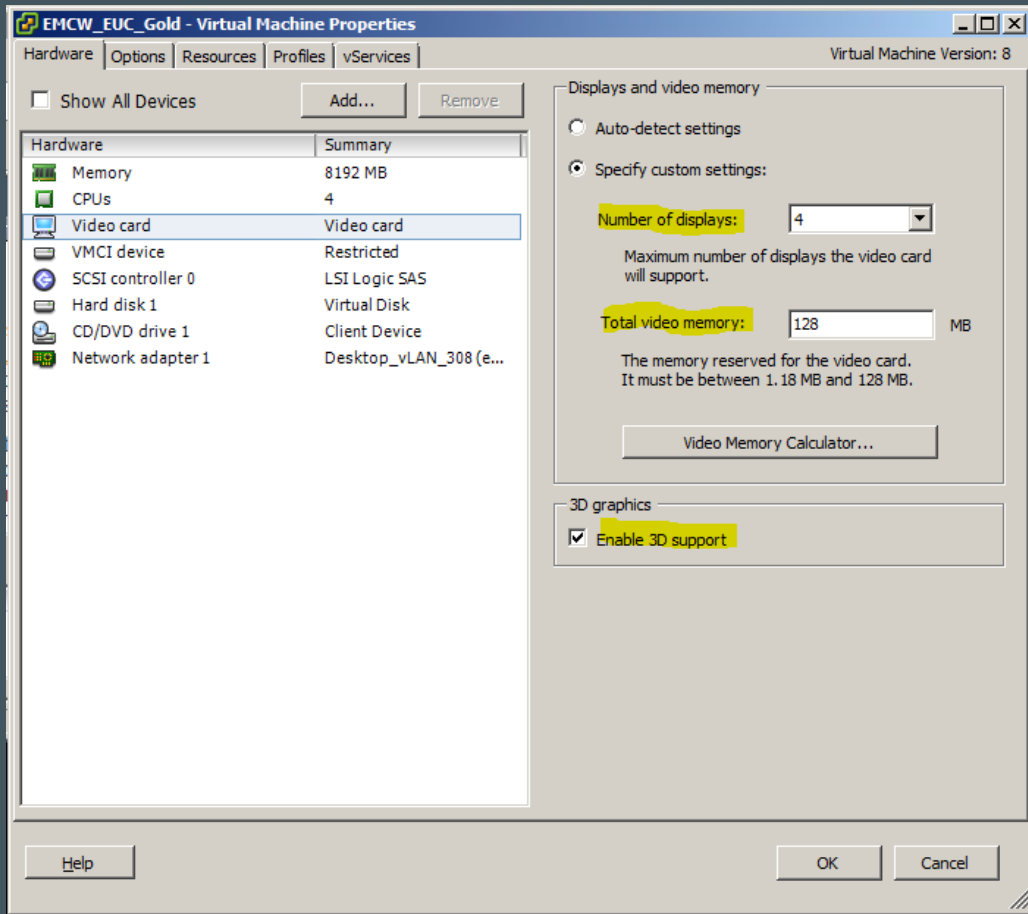
# ENABLING SOFT 3D ON A STANDALONE VM

1. Edit Settings on the VM
2. Select Video Card
3. Check Enable
4. Increase Video RAM to 128MB\*
5. Adjust Displays Accordingly
6. Click OK

\*128MB Max memory for Soft 3D, 512MB Max vSGA In Horizon View 5.2







# ENABLING SOFT 3D ON A VIEW POOL

1. Edit Settings on Horizon View Pool
2. Select Pool Settings Tab
3. Set Default Display Protocol to PCoIP
4. Do Not Allow Users to Choose
5. Set 3D Renderer Accordingly (Software)
6. Configure Video RAM (128MB for Soft 3D)
7. Set Max Monitors (1 or 2)
8. Click OK
9. Reboot Pool



# POOL SETTINGS

The image shows a 'Remote Display Protocol' settings dialog box. A smaller 'Configure VRAM for 3D guests' dialog is open on top of it. The VRAM dialog has a title bar and a message: 'More VRAM can improve 3D performance, use the slider to'. The main dialog has the following settings:

- Default display protocol: PCoIP
- Allow users to choose protocol: No
- 3D Renderer: Software (with a 'Configure...' button and a help icon)
- Max number of monitors: 2 (with a help icon)
- May require power-cycle of related virtual machines (with a help icon)
- Max resolution of any one monitor: 1920x1200 (with a help icon)
- May require power-cycle of related virtual machines (with a help icon)

Buttons for 'OK' and 'Cancel' are at the bottom right.












# OTHER TIPS AND TRICKS

- Update VMware Tools
- Check CPU Idle Time on Thin Clients
- Supported with Windows 7 & Higher
- If set on both Gold Image & Horizon View Display Memory should match.
- Use VMXNET3 Virtual NIC's



# APPLICATION LIMITS OF SOFT 3D

Application	Soft 3D Appropriate
Windows Aero	
Microsoft Office	
Microsoft Visio	
Google Earth	
HTML 5/Web 3D	
Epic	
Adobe Photoshop	
SolidWorks View	
Team Center Vis	



# SIZING CONSIDERATION FOR SOFT 3D

- 128 MB of Video RAM (VRAM) maximum for Soft 3D
- May need multiple vCPU's per desktop
- Consider PCoIP for Higher Latency Hops
- Reduce the Maximum Application Frame Rate
  - `HKLM\SOFTWARE\VMware, Inc.\VMware SVGA DevTap\MaxAppFrameRate`
  - Defaults to 30 FPS



# VIDEO MEMORY CALCULATOR

- Use the “Video Memory Calculator”
  - Oversubscribing RAM for Video reduces density
  - Math of “Video Memory Calculator”



$$\frac{\text{VRAM per Desktop}}{\text{GPU RAM}} = \text{Density Per Host}$$

OR

$$\frac{128\text{MB of VRAM}}{\text{GPU 4GB of RAM}} = 32 \text{ VM's Per Host}$$

OR

$$\frac{512\text{MB of VRAM}}{\text{GPU 4GB of RAM}} = 8 \text{ VM's Per Host}$$

A screenshot of a software interface for a video memory calculator. It features a text input field for "Total video memory:" with the value "128" and the unit "MB". Below the input field, there is a descriptive text: "The memory reserved for the video card. It must be between 1.18 MB and 128 MB." A button labeled "Video Memory Calculator..." is positioned below the text. At the bottom of the interface, there is a section for "3D graphics" with a checked checkbox and the label "Enable 3D support".

# ALTERNATIVES MODES

## vSGA – View Shared Graphics Acceleration

- Uses Hardware GPU
- Live vMotion Support

## vDGA – Virtual Dedicated Graphics Acceleration

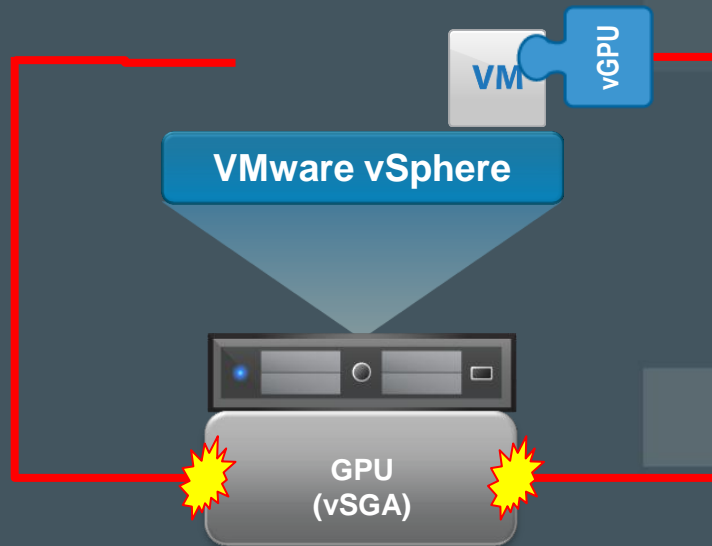
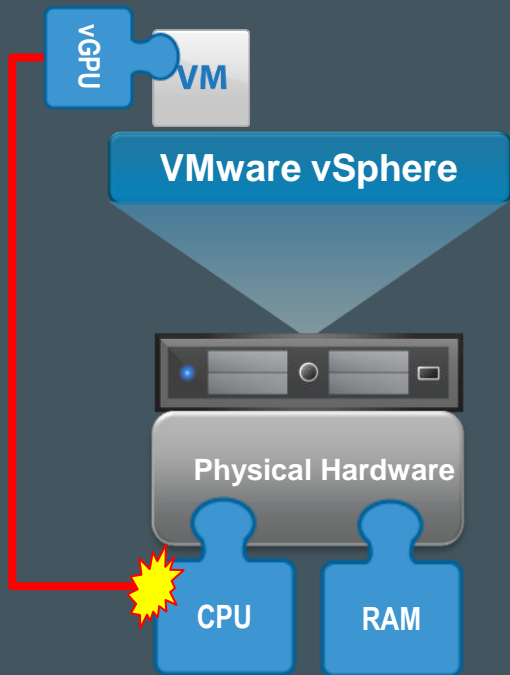
- Dedicated GPU per VM – Tech Preview Currently
- No Live vMotion

Max support of 8 GPU's per ESXi host





# vMotion with GPU



# QUESTIONS?



# FURTHER INFORMATION

<http://wondererd.net/blog>

- Copy of Slides
- Blog Post



# REFERENCES

- VMware Graphics Acceleration Deployment Guide - <http://www.vmware.com/files/pdf/techpaper/vmware-horizon-view-graphics-acceleration-deployment.pdf>
- VMware Horizon View Architecture Planning - <https://pubs.vmware.com/view-52/topic/com.vmware.ICbase/PDF/horizon-view-52-architecture-planning.pdf>
- VMware Horizon Performance Study - <http://www.vmware.com/files/pdf/view/vmware-horizon-view-hardware-accelerated-3Dgraphics-performance-study.pdf>

