



GPU considerations

NetApp Solutions

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May 24, 2021

This PDF was generated from https://docs.netapp.com/us-en/netapp-solutions/vdi-vds/hcvdivds_gpu_considerations.html on October 21, 2021. Always check docs.netapp.com for the latest.

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GPU considerations

GPUs are typically used for graphic visualization (rendering) by performing repetitive arithmetic calculations. This repetitive compute capability is often used for AI and deep learning use cases.

For graphic intensive applications, Microsoft Azure offers the NV series based on the NVIDIA Tesla M60 card with one to four GPUs per VM. Each NVIDIA Tesla M60 card includes two Maxwell-based GPUs, each with 8GB of GDDR5 memory for a total of 16GB.



An NVIDIA license is included with the NV series.

Graphics Card

Sensors

Advanced

Validation



Name NVIDIA Tesla M60

Lookup

GPU GM204

Revision

FF

Technology 28 nm

Die Size

398 mm²

Release Date Aug 30, 2015

Transistors

5200M

BIOS Version 84.04.85.00.03

☐ UEFI

Subvendor NVIDIA

Device ID

10DE 13F2 - 10DE 115E

ROPs/TMUs 64 / 128

Bus Interface

PCI



Shaders 2048 Unified

DirectX Support

12 (12_1)

Pixel Fillrate 75.4 GPixel/s

Texture Fillrate

150.8 GTexel/s

Memory Type GDDR5 (Hynix)

Bus Width

256 bit

Memory Size 8192 MB

Bandwidth

160.4 GB/s

Driver Version 27.21.14.5257 (NVIDIA 452.57) / 2016

Driver Date Oct 22, 2020

Digital Signature

WHQL

GPU Clock 557 MHz

Memory

1253 MHz

Boost

1178 MHz

Default Clock 557 MHz

Memory

1253 MHz

Boost

1178 MHz

NVIDIA SLI Disabled


Computing ☒ OpenCL ☐ CUDA ☒ DirectCompute ☒ DirectMLTechnologies ☒ Vulkan ☐ Ray Tracing ☐ PhysX ☒ OpenGL 4.6

NVIDIA Tesla M60

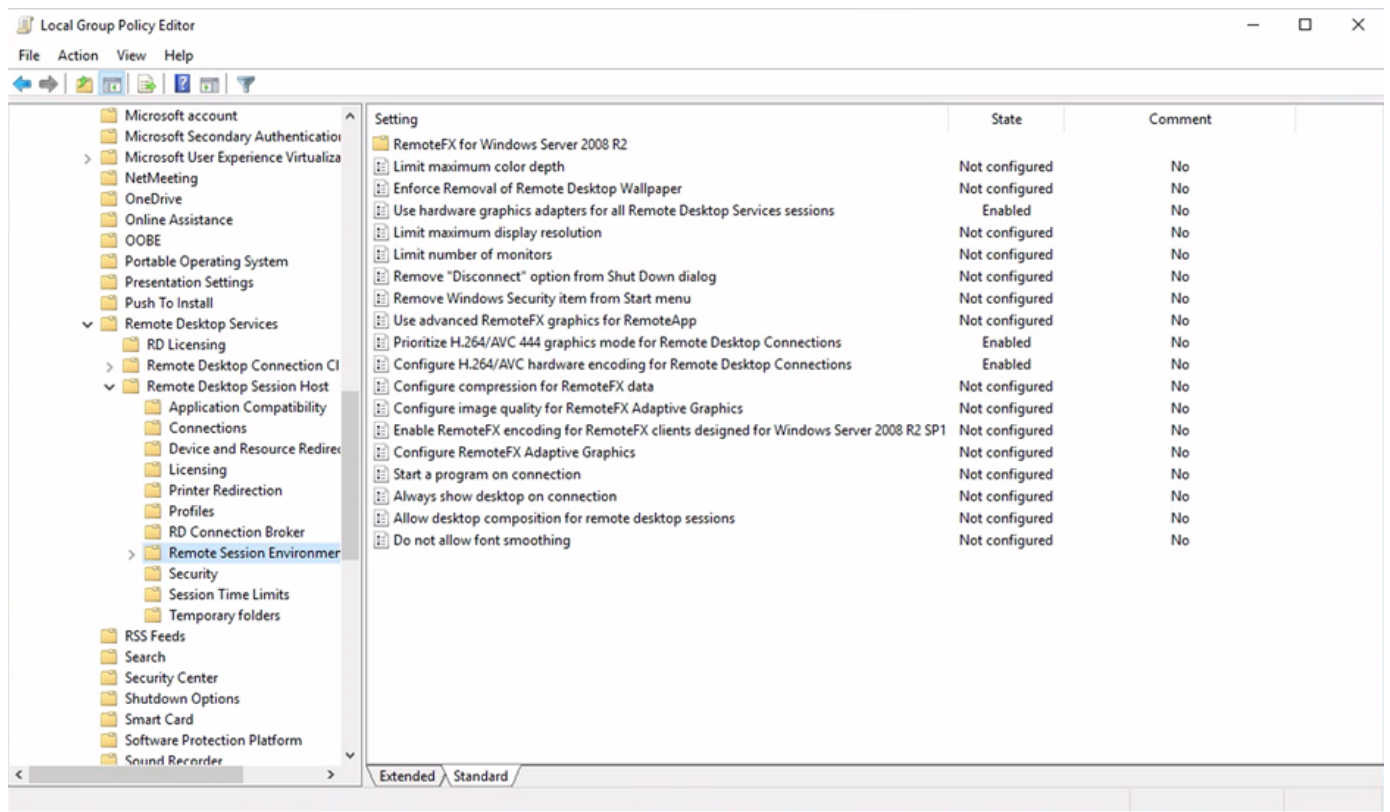


Close

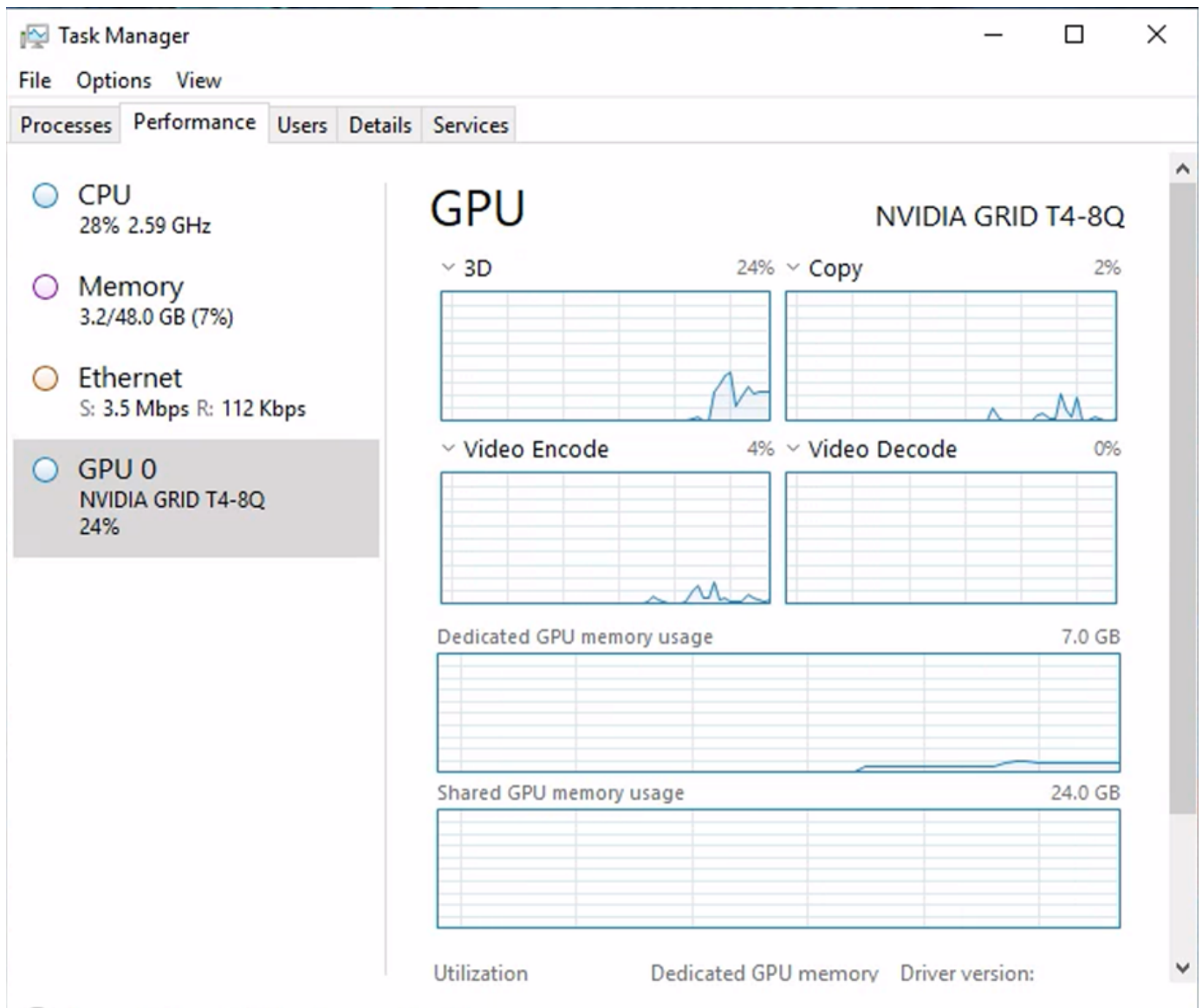
With NetApp HCI, the H615C GPU contains three NVIDIA Tesla T4 cards. Each NVIDIA Tesla T4 card has a Turing-based GPU with 16GB of GDDR6 memory. When used in a VMware vSphere environment, virtual machines are able to share the GPU, with each VM having dedicated frame buffer memory. Ray tracing is available with the GPUs on the NetApp HCI H615C to produce realistic images including light reflections. Please note that you need to have an NVIDIA license server with a license for GPU features.

Graphics Card		Sensors	Advanced	Validation
Name	NVIDIA GRID T4-8Q			Lookup
GPU	TU104	Revision	A1	
Technology	12 nm	Die Size	545 mm ²	
Release Date	Sep 13, 2018	Transistors	13600M	
BIOS Version	0.00.00.00.00			 <input type="checkbox"/> UEFI
Subvendor	NVIDIA	Device ID	10DE 1EB8 - 10DE 130F	
ROPs/TMUs	8 / 160	Bus Interface	PCI ?	
Shaders	2560 Unified	DirectX Support	12 (12_2)	
Pixel Fillrate	4.7 GPixel/s	Texture Fillrate	93.6 GTexel/s	
Memory Type	GDDR6	Bus Width	256 bit	
Memory Size	8192 MB	Bandwidth	Unknown	
Driver Version	27.21.14.5257 (NVIDIA 452.57) / 2016			
Driver Date	Oct 22, 2020	Digital Signature	WHQL	
GPU Clock	585 MHz	Memory	0 MHz	Shader N/A
Default Clock	585 MHz	Memory	0 MHz	Shader N/A
NVIDIA SLI	Disabled			
Computing	<input checked="" type="checkbox"/> OpenCL	<input checked="" type="checkbox"/> CUDA	<input checked="" type="checkbox"/> DirectCompute	<input type="checkbox"/> DirectML
Technologies	<input checked="" type="checkbox"/> Vulkan	<input checked="" type="checkbox"/> Ray Tracing	<input type="checkbox"/> PhysX	<input checked="" type="checkbox"/> OpenGL 4.6
NVIDIA GRID T4-8Q				Close

To use the GPU, you must install the appropriate driver, which can be downloaded from the NVIDIA license portal. In an Azure environment, the NVIDIA driver is available as GPU driver extension. Next, the group policies in the following screenshot must be updated to use GPU hardware for remote desktop service sessions. You should prioritize H.264 graphics mode and enable encoder functionality.



Validate GPU performance monitoring with Task Manager or by using the nvidia-smi CLI when running WebGL samples. Make sure that GPU, memory, and encoder resources are being consumed.



To make sure that the virtual machine is deployed to the NetApp HCI H615C with Virtual Desktop Service, define a site with the vCenter cluster resource that has H615C hosts. The VM template must have the required vGPU profile attached.

For shared multi-session environments, consider allocating multiple homogenous vGPU profiles. However, for high end professional graphics application, it is better to have each VM dedicated to a user to keep VMs isolated.

The GPU processor can be controlled by a QoS policy, and each vGPU profile can have dedicated frame buffers. However, the encoder and decoder are shared for each card. The placement of a vGPU profile on a GPU card is controlled by the vSphere host GPU assignment policy, which can emphasize performance (spread VMs) or consolidation (group VMs).

Next: [Solutions for industry.](#)

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