

The logo for the GPU Technology Conference is located in the top left corner. It consists of a green rectangular box containing the text "GPU" in a large, bold, white sans-serif font, followed by "TECHNOLOGY" and "CONFERENCE" in a smaller, white sans-serif font stacked vertically.

GPU TECHNOLOGY
CONFERENCE

The background of the slide is an abstract digital graphic. It features a dark, textured surface with a glowing grid pattern. Bright, multi-colored lines (green, blue, yellow, red) intersect and flow across the grid, creating a sense of dynamic energy and data movement.

NVIDIA GRID™ **GPU Acceleration for Virtualization**

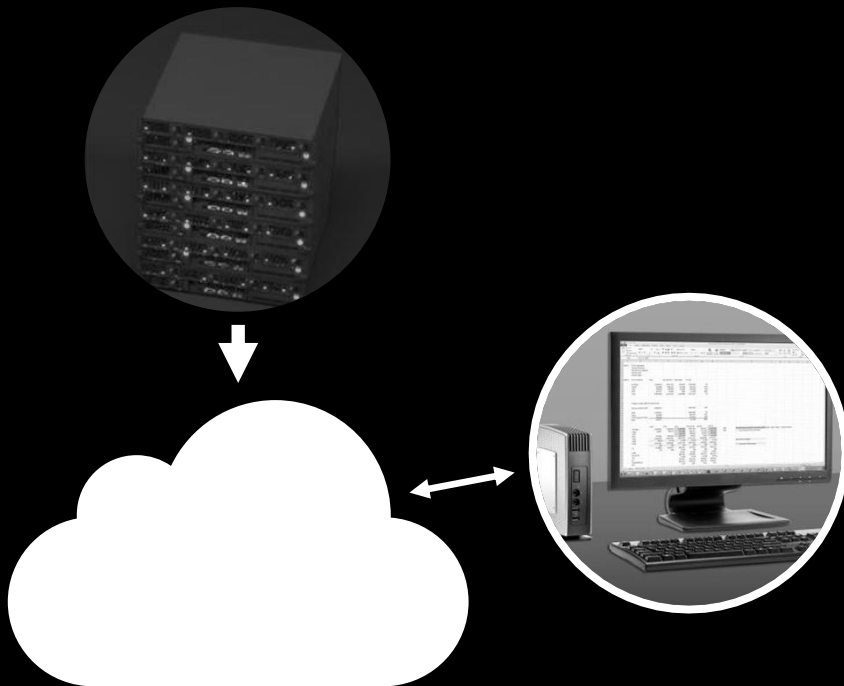
AGENDA

GRID For VDI

GRID Enabled Solutions

User Profiles and Experiences

VDI Circa 2011



GRID Powered VDI

Designer



Task Worker



Power
User



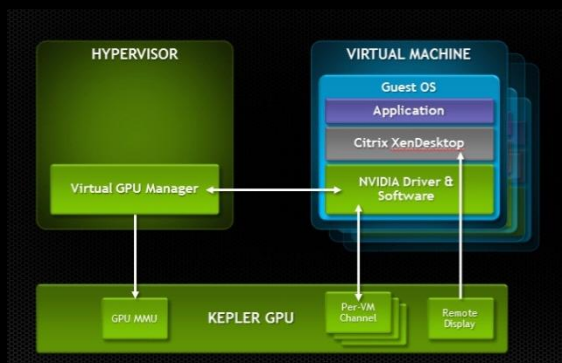
Knowledge
Worker



A TRUE PC EXPERIENCE

Delivered to any device
for the hundreds of millions
of power users who want to
bring their own devices to
work.

Key Components of GRID



GRID VGX
Software



GRID
GPUs



GRID VCA
Visual Computing Appliance



VDI

POWERED BY
NVIDIA GRID™



VIRTUAL MACHINE

Windows 7

Apps

NVIDIA GRID Enabled
Virtual Desktop

NVIDIA Driver

NVIDIA GRID ENABLED
Hypervisor

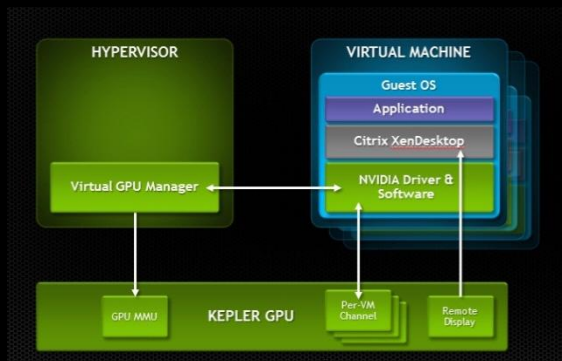
NVIDIA GRID GPU



VIRTUAL DESKTOPS



Key Components of GRID



GRID VGX
Software



GRID
GPUs



GRID VCA
Visual Computing Appliance

Key Components of GRID



GRID
GPUs

NVIDIA Brands



GeForce®
Quadro®
Tesla®



Tegra®



NVIDIA GRID™

NVIDIA GRID K1



NVIDIA GRID K2



GPU	4 Kepler GPUs	2 High End Kepler GPUs
CUDA cores	768 (192 / GPU)	3072 (1536 / GPU)
Memory Size	16GB DDR3 (4GB / GPU)	8GB GDDR5
Max Power	130 W	225 W
Form Factor	Dual Slot ATX, 10.5"	Dual Slot ATX, 10.5"
Display IO	None	None
Aux power requirement	6-pin connector	8-pin connector
PCIe	x16	x16
PCIe Generation	Gen3 (Gen2 compatible)	Gen3 (Gen2 compatible)
Cooling solution	Passive	Passive
# users	4 - 100 ¹	2 - 64 ¹
Watts per user	~ 1.5 W	~ 3.5 W
OpenGL	4.x	4.x
Microsoft DirectX	11	11
GRID VGX Virtualization support	Yes	Yes

¹ Number of users depends on software solution, workload, and screen resolution

GRID Enabled OEM Platforms

Available Today



IBM iDataPlex DX360
2 GRID K1 or 2 GRID K2



Dell PowerEdge R720
2 GRID K1 or 2 GRID K2

Available Q2 2013



Cisco UCS C240 M3
2 GRID K1 or 2 GRID K2



HP ProLiant SL250
2 GRID K2



HP ProLiant SL270
4+ GRID K2



HP ProLiant WS460c Gen8
1 GRID K1 or 1 GRID K2

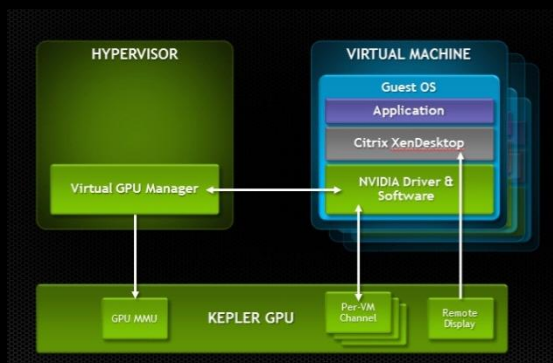


SuperMicro SYS-1027-TRF
2 GRID K1 or 3 GRID K2



SuperMicro SYS-2027-TRF
2 GRID K1 or 4 GRID K2

Key Components of GRID



GRID VGX
Software

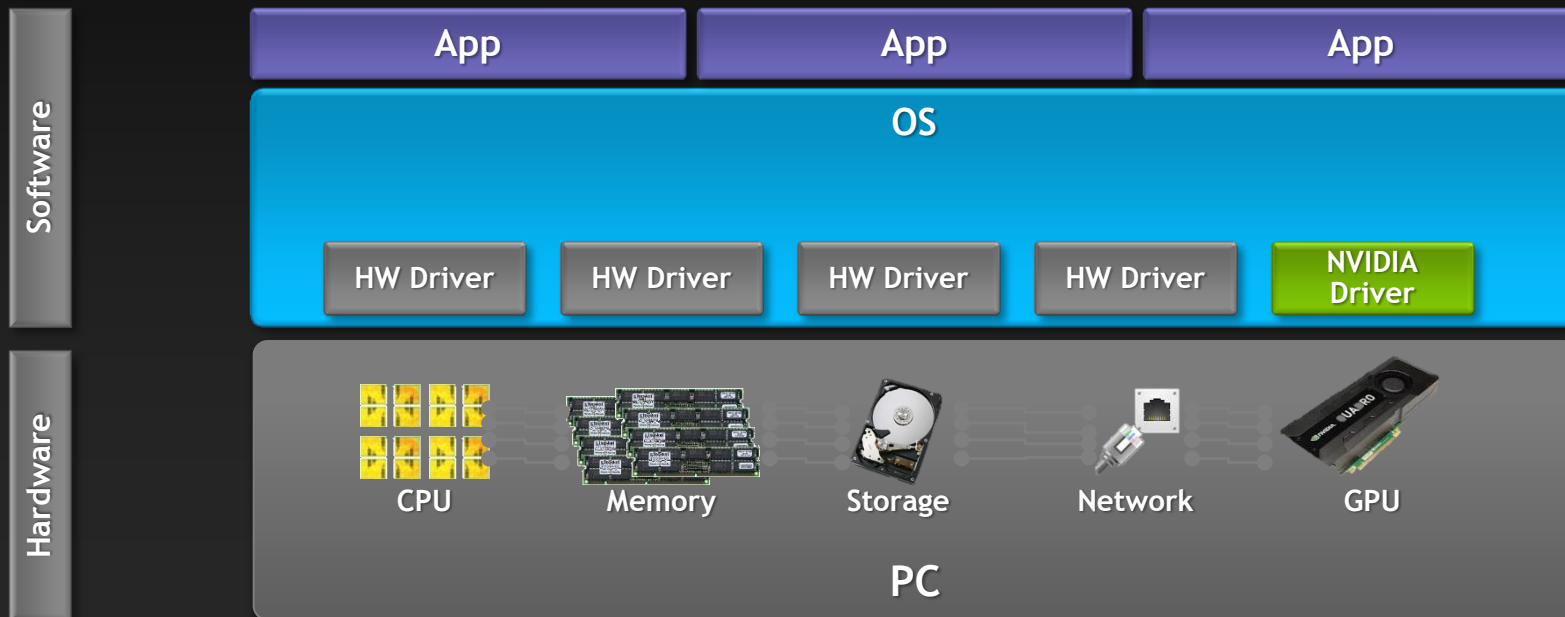


GRID
GPUs

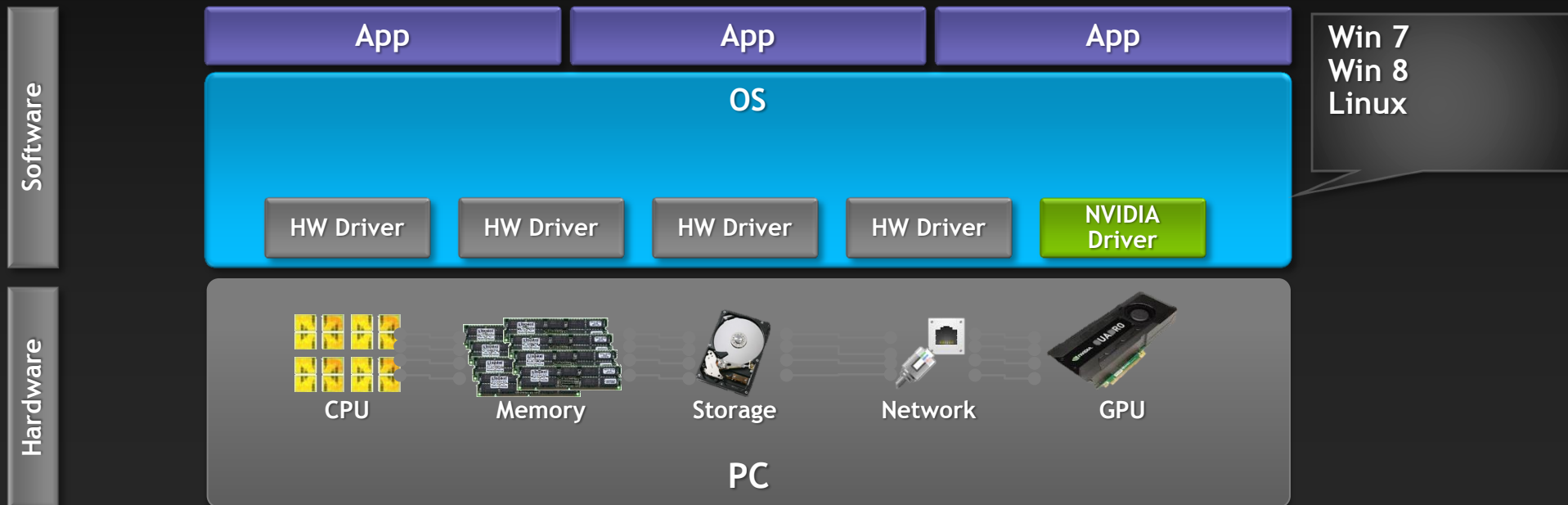


GRID VCA
Visual Computing Appliance

The PC



The PC

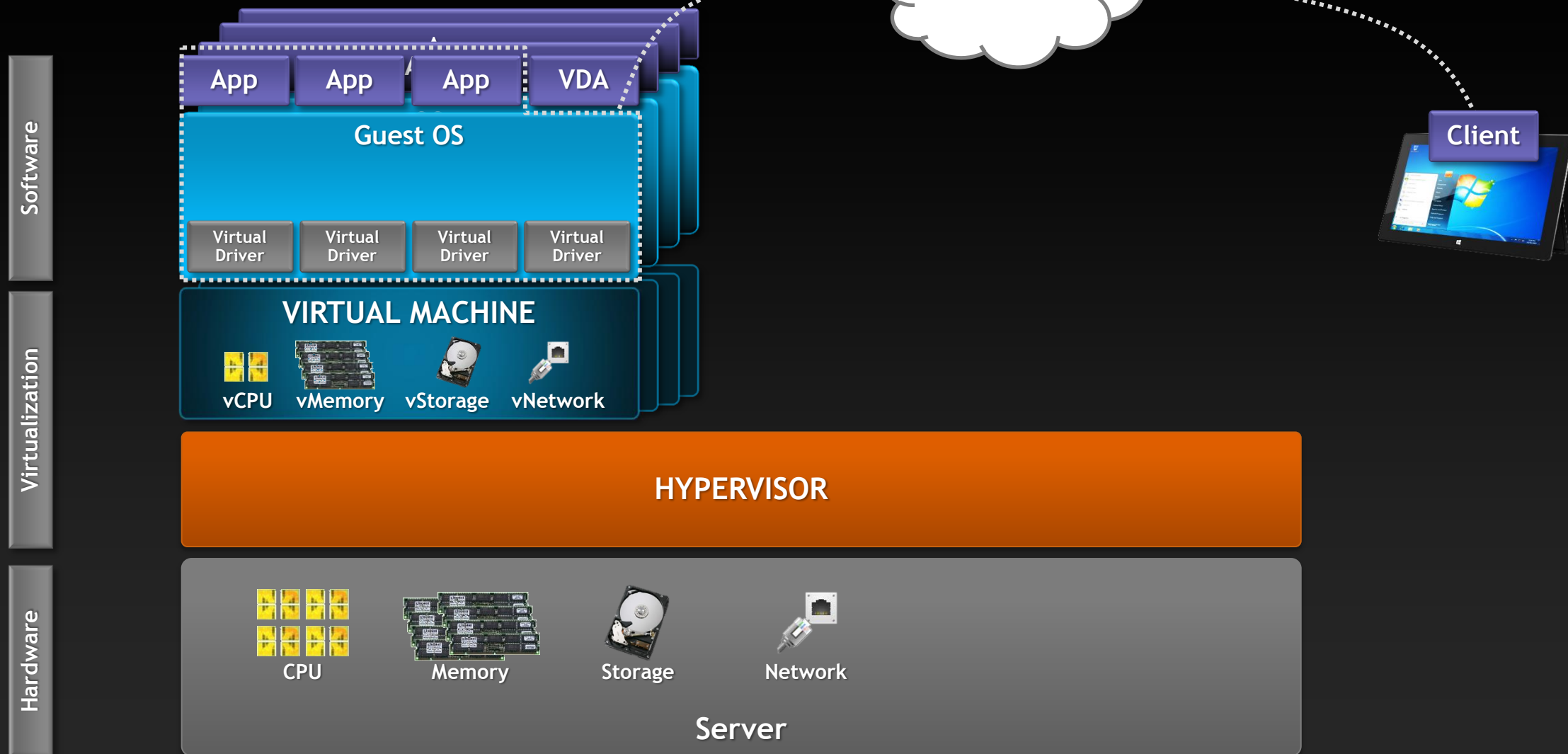


The Virtualized Desktop

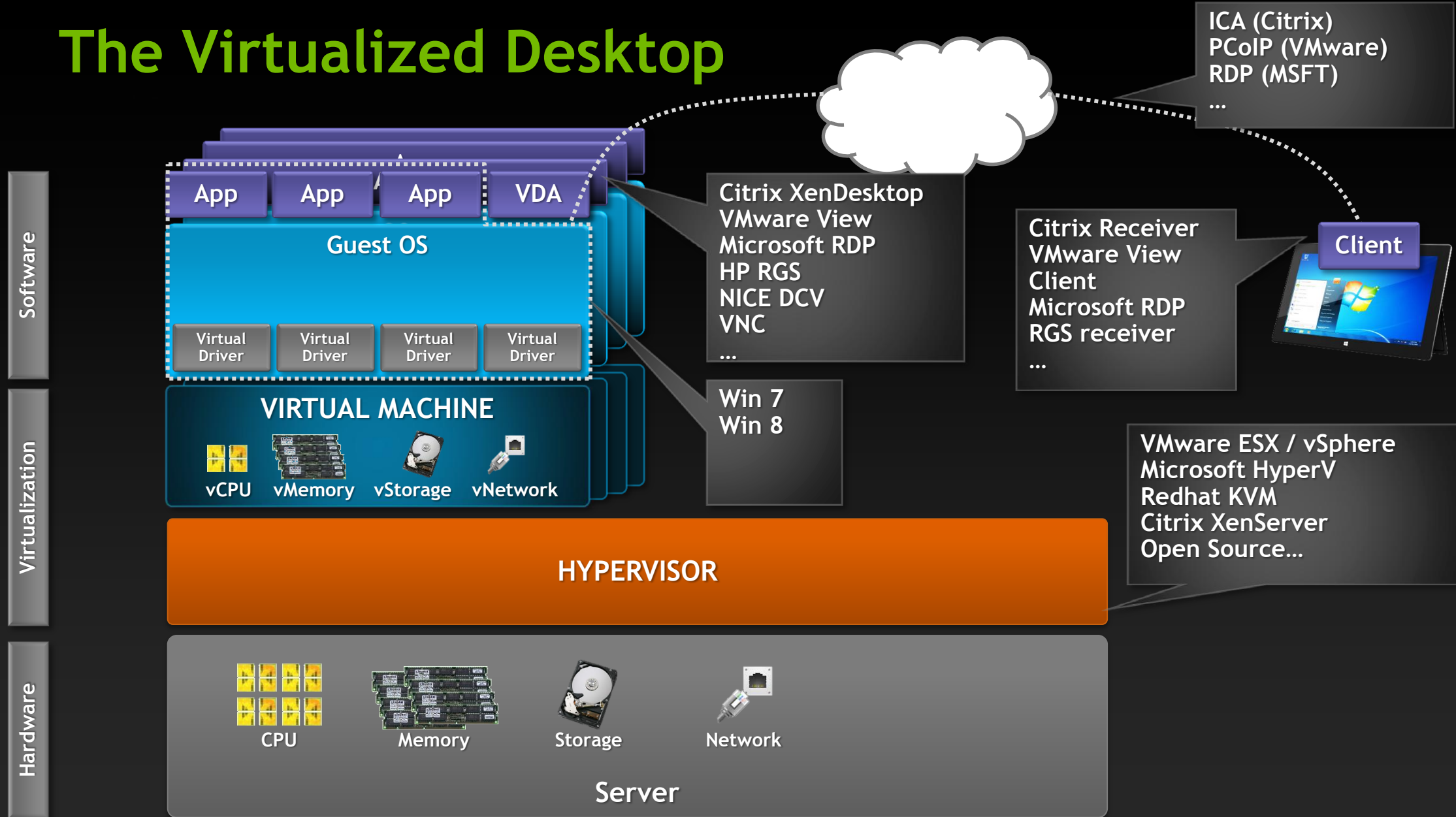


- Synonymous terms
 - VDI - Virtual Desktop Infrastructure
 - HVD - Hosted Virtual Desktop
 - Client Virtualization
- Purpose
 - Replace physical desktop / laptops with virtual desktops on servers
- Benefits
 - Move the compute resource closer to the large data in the data-center
 - Security - Company IP stays in the data-center
 - Manageability - OS image management
 - User Flexibility - any device, anywhere, anytime
 - Resource Utilization - keep shared resources busy for better ROI

The Virtualized Desktop



The Virtualized Desktop

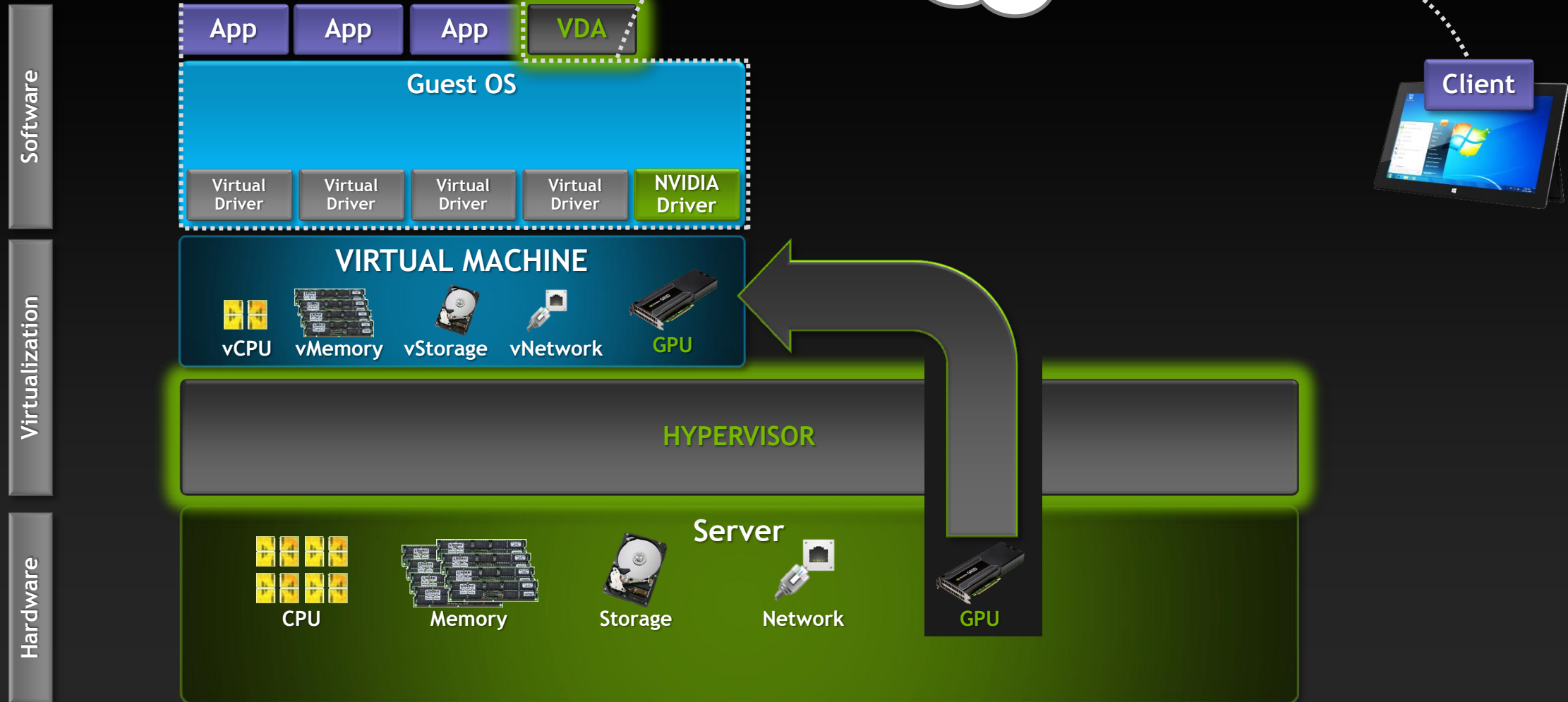


GPUs in a Virtual Desktop

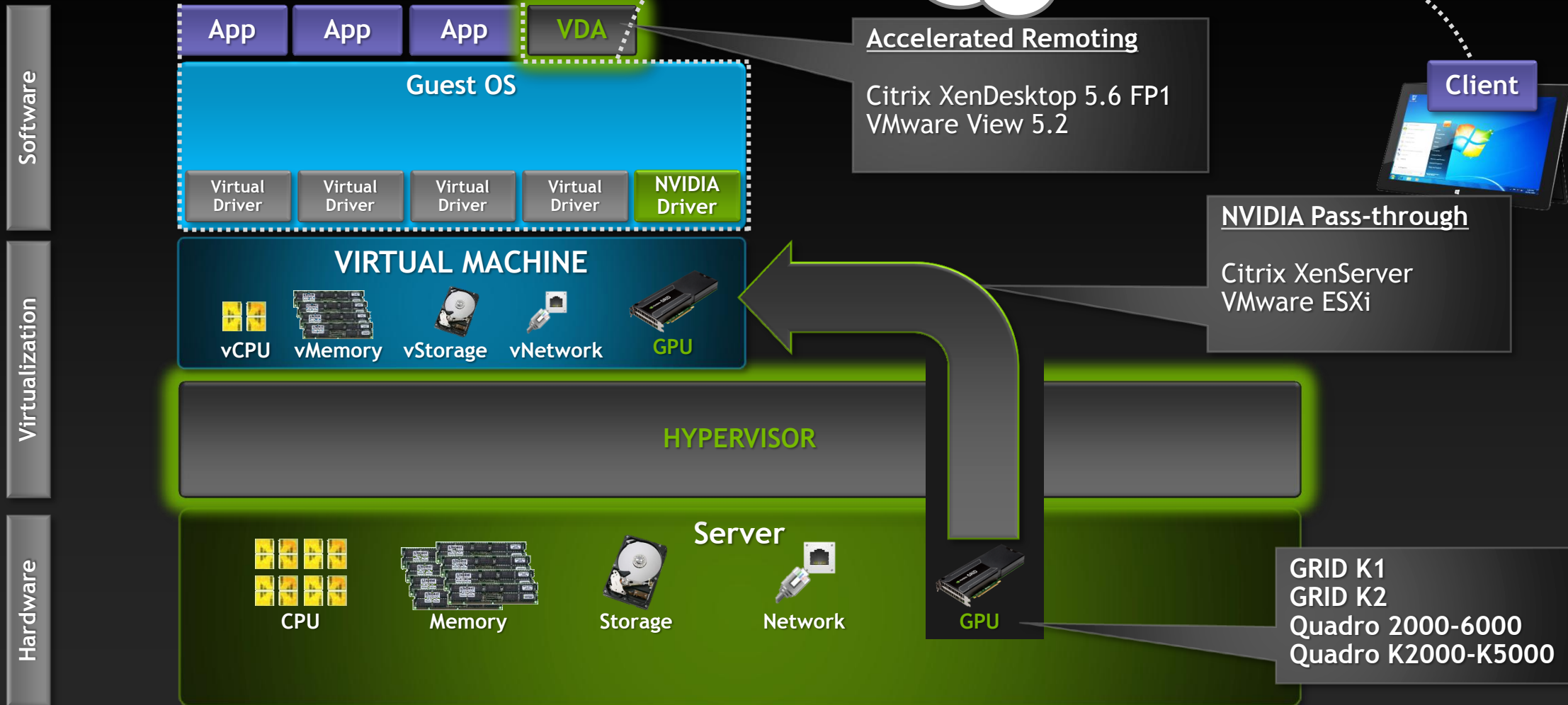


- GPU pass-through 1:1 dedicated GPU to user
- Shared GPU *Software* virtualization of the GPU
- GRID VGX *Hardware* virtualization of the GPU through the NVIDIA GRID VGX technology

GPU Pass-Through



GPU Pass-Through



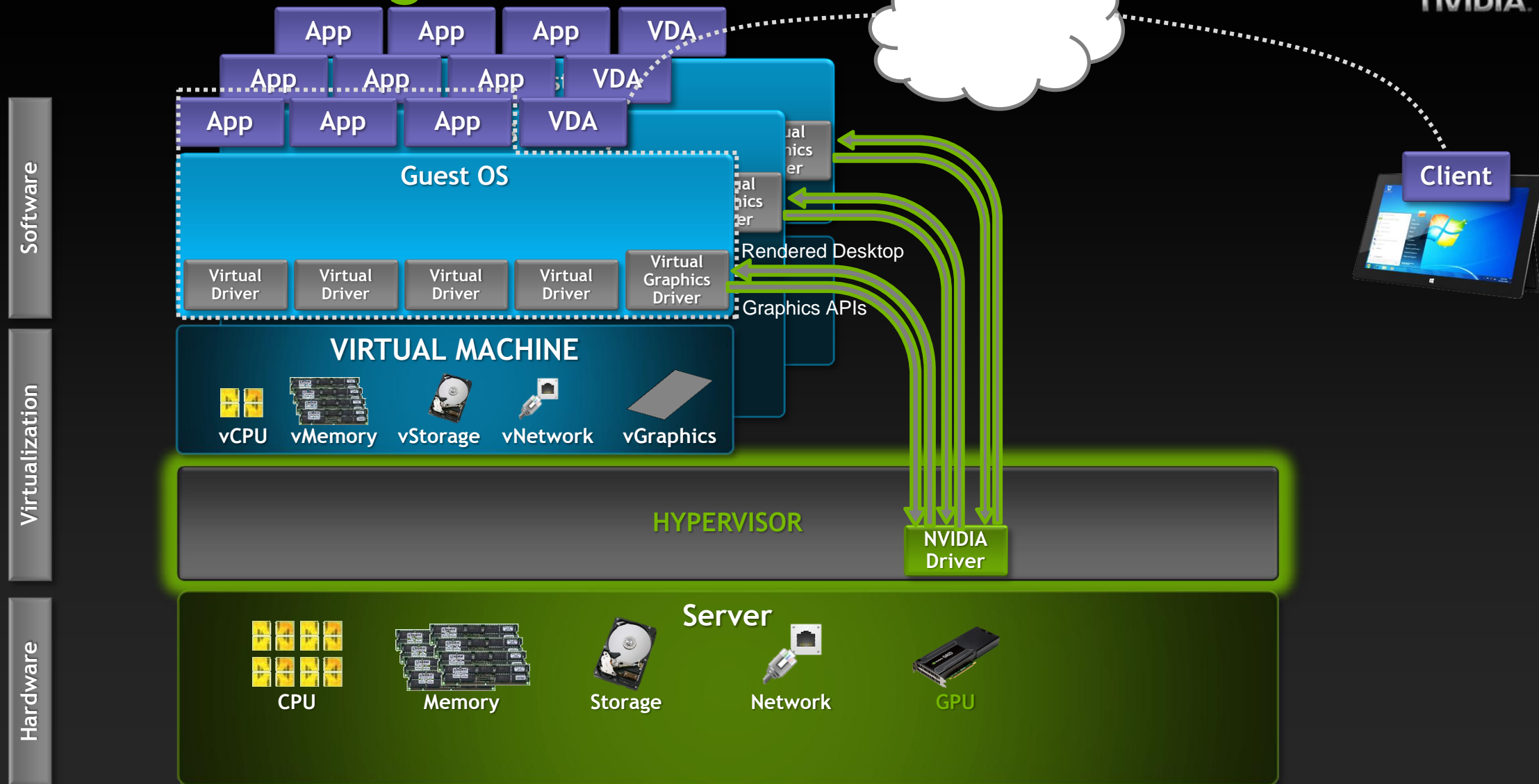
GPU Sharing



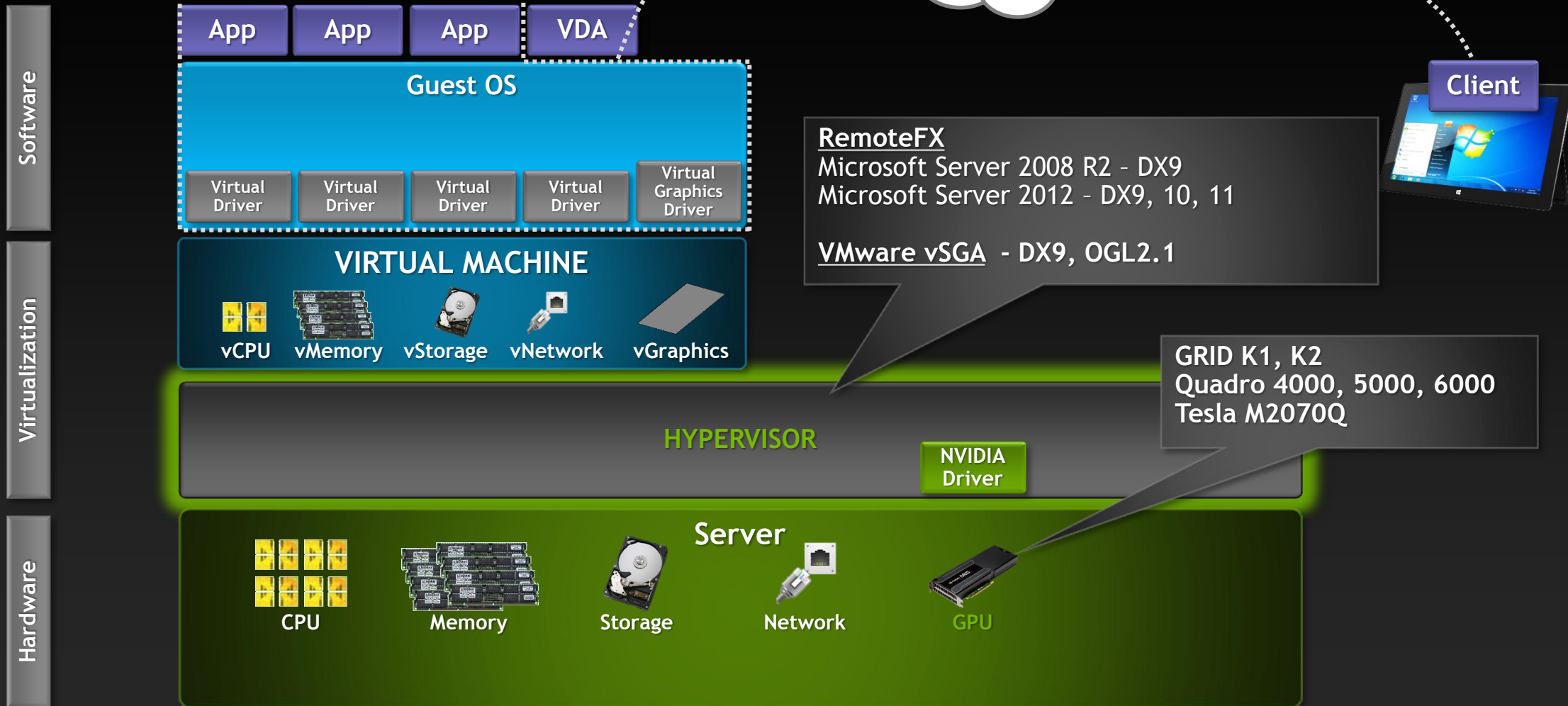
Also known as

- Software Virtualization
- API intercept

GPU Sharing



GPU Sharing



HW GPU Virtualization



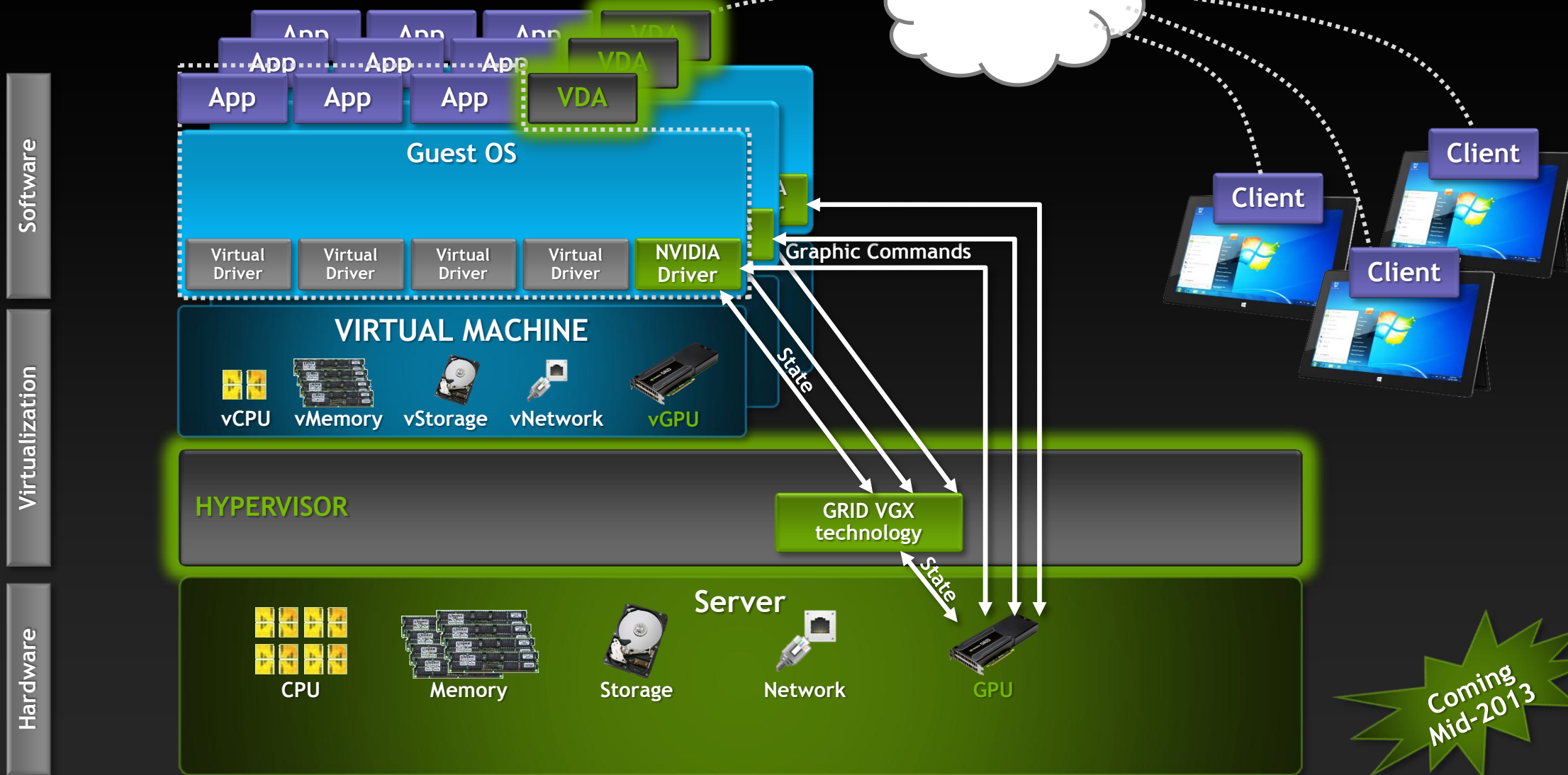
Also known as

- NVIDIA GRID™ VGX technology
- VGX GPU Hypervisor
- vGPU
- Virtual GPU
- Hardware Virtualization

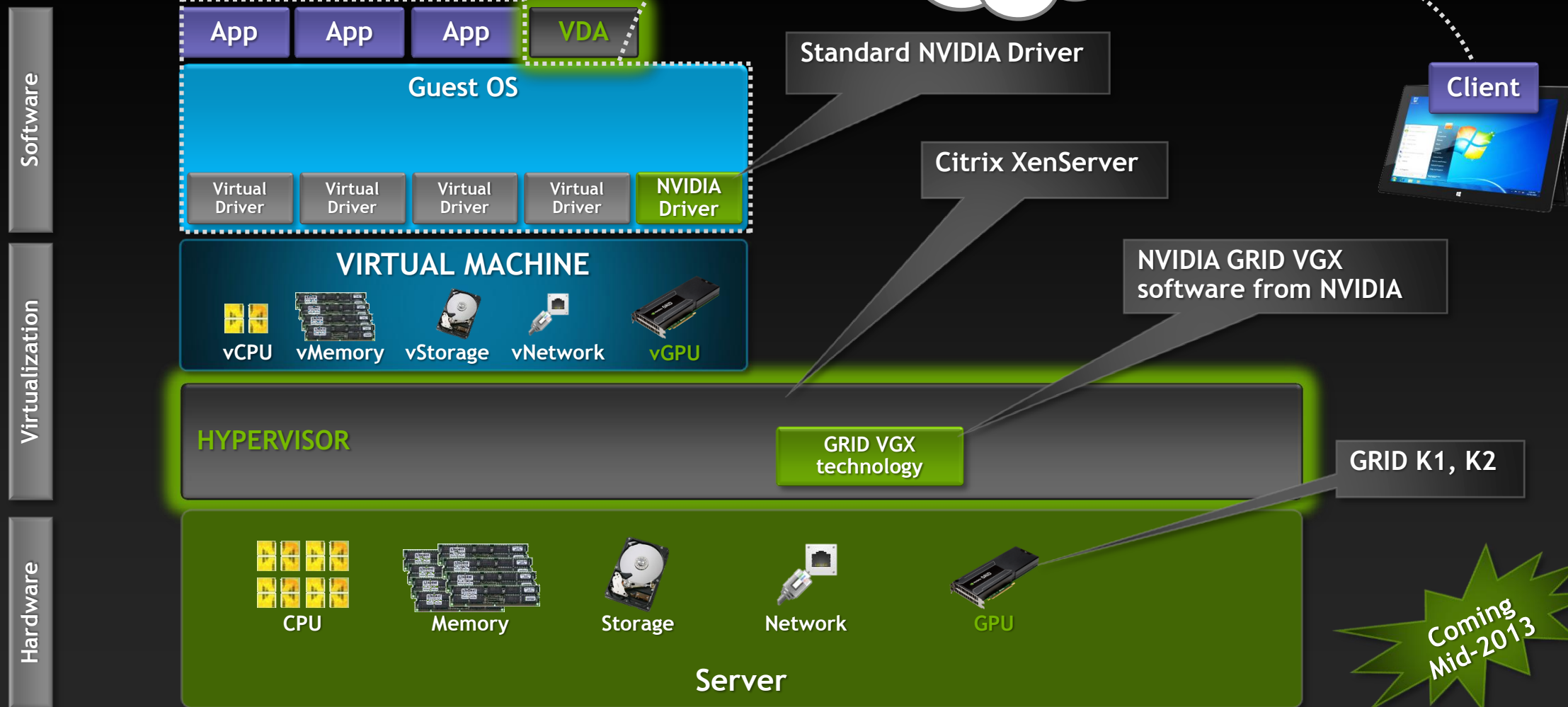
A green, multi-pointed starburst graphic with a slight gradient and a drop shadow, containing the text "Coming Mid-2013".

Coming
Mid-2013

HW GPU Virtualization



HW GPU Virtualization



USER EXAMPLES

Virtual Remote Workstation



DESIGNER
(CATIA, CS6, Inventor)



Virtual Desktop



POWER USER
(PLM, Med Img, Showcase, Photoshop)



KNOWLEDGE WORKER
(MS Office, HTML5)





DESIGNER



POWER USER



KNOWLEDGE
WORKER



PowerPoint



DESIGNER



POWER USER






KNOWLEDGE
WORKER

No GPU

Shared GPU

Pass-through

		No GPU	Shared GPU	Pass-through
	DESIGNER	✗	✗	✓
	POWER USER	✗	✗ / ✓	✓
	KNOWLEDGE WORKER	✓	✓	✓

One more thing...

XenApp - accelerated by GRID

Next...

- **Delivering 3D Graphics from the Cloud with XenApp and XenDesktop VDI**
 - Derek Thorslund (Director of Product Management, Citrix)

THANK YOU