



CLOUD GAMING AND NVIDIA GRID™

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AGENDA

Why Cloud Gaming?

Game Input Latency

Cloud Gaming Architecture

GPU Architectures

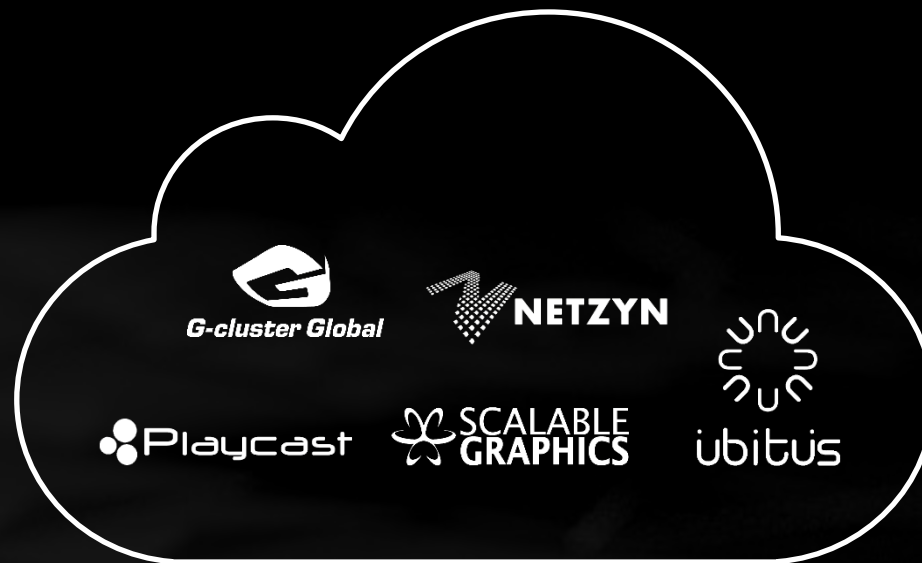
GRID Servers



CLOUD'IFICATION



Music, Movies, Books
< 2013



Games
2014+



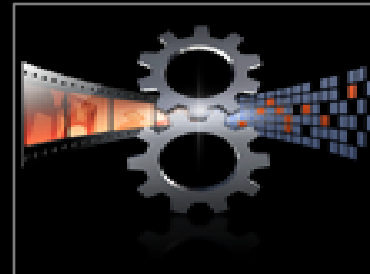
CLOUD GPUS FOR 6 MARKETS



Cloud Gaming
(GRID)



Application Streaming
(GRID SDK)



Realtime Encode
(NVENC SDK)



Accelerated Virtual
Desktops (vGPU)



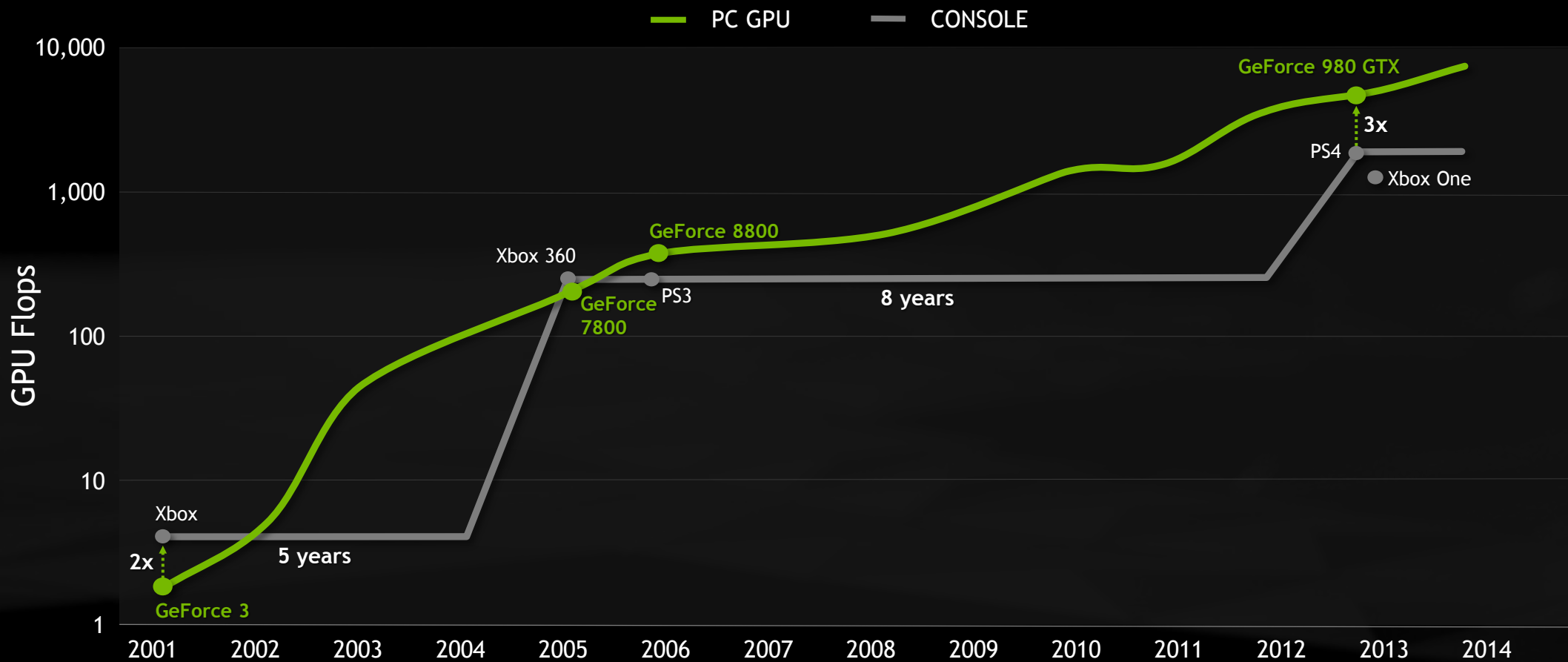
Remote Workstations
(Quadro)



High Performance
Computing (TESLA)



PC GPU vs CONSOLES



CLOUD GAMING ADVANTAGES



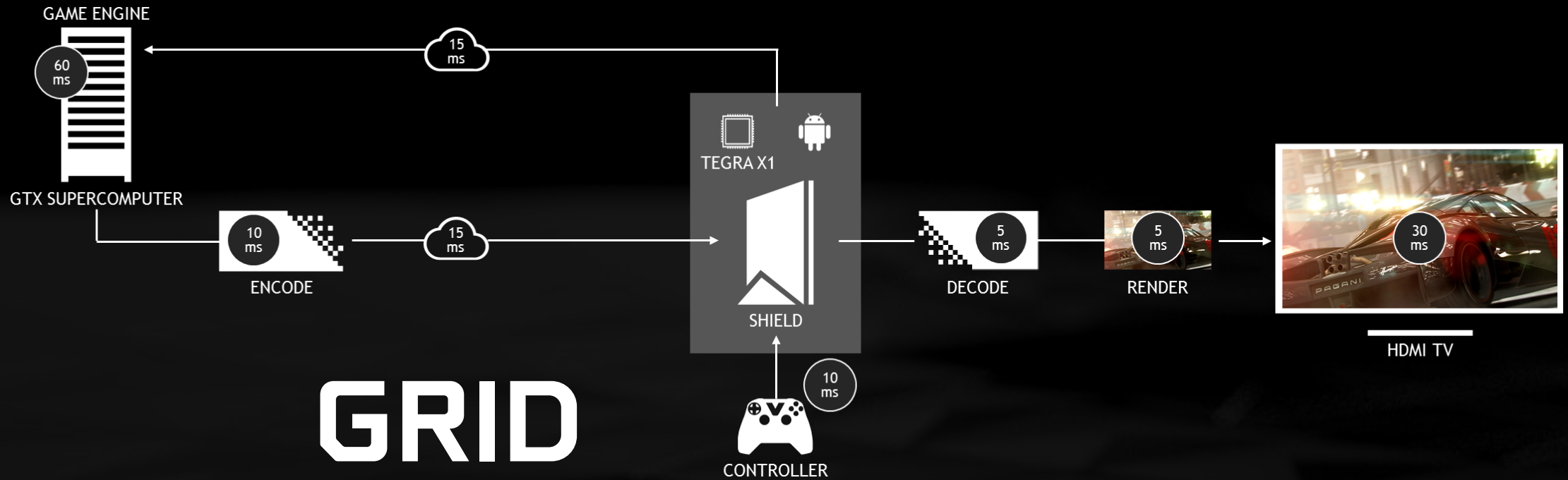


NVIDIA GRID GAME-STREAMING SERVICE

1080p 60 fps • Play in a Minute • AAA titles



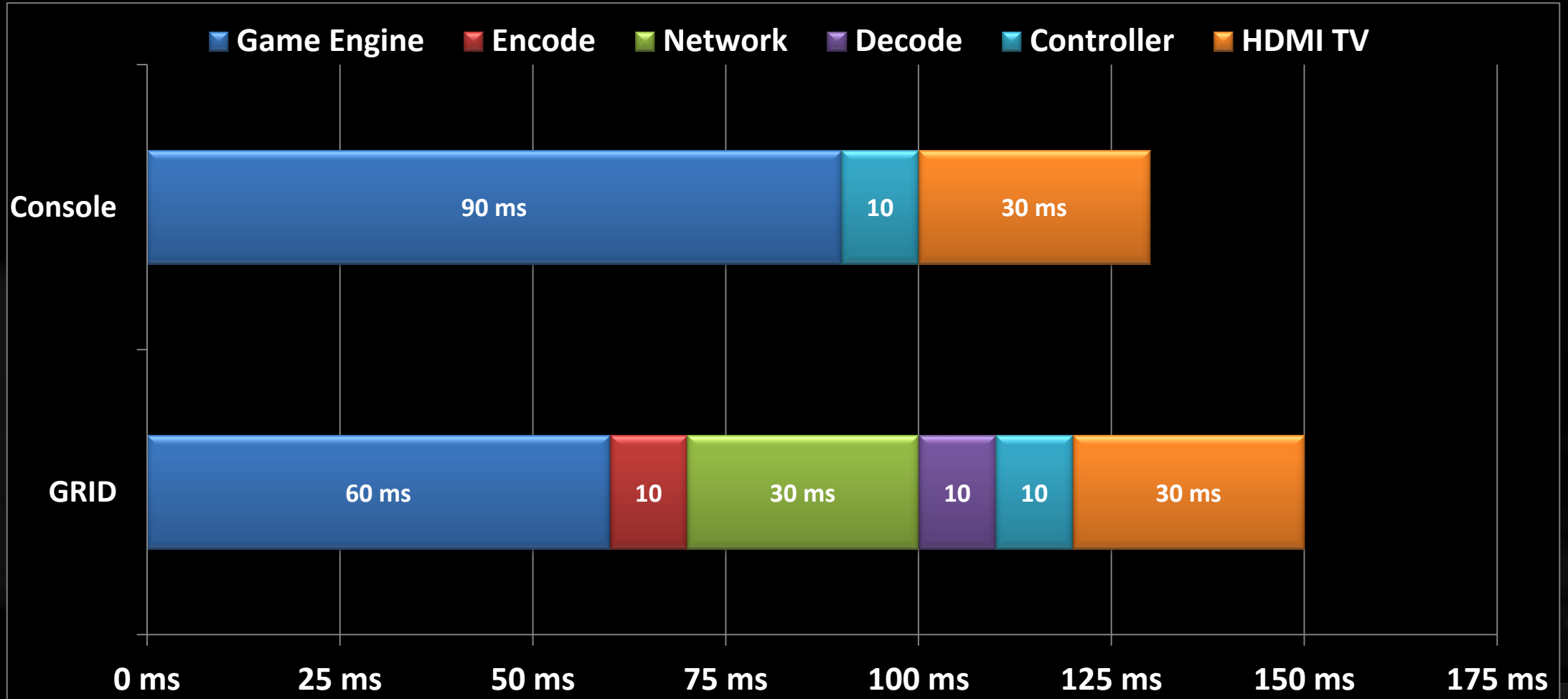
GAME STREAMING ARCHITECTURE



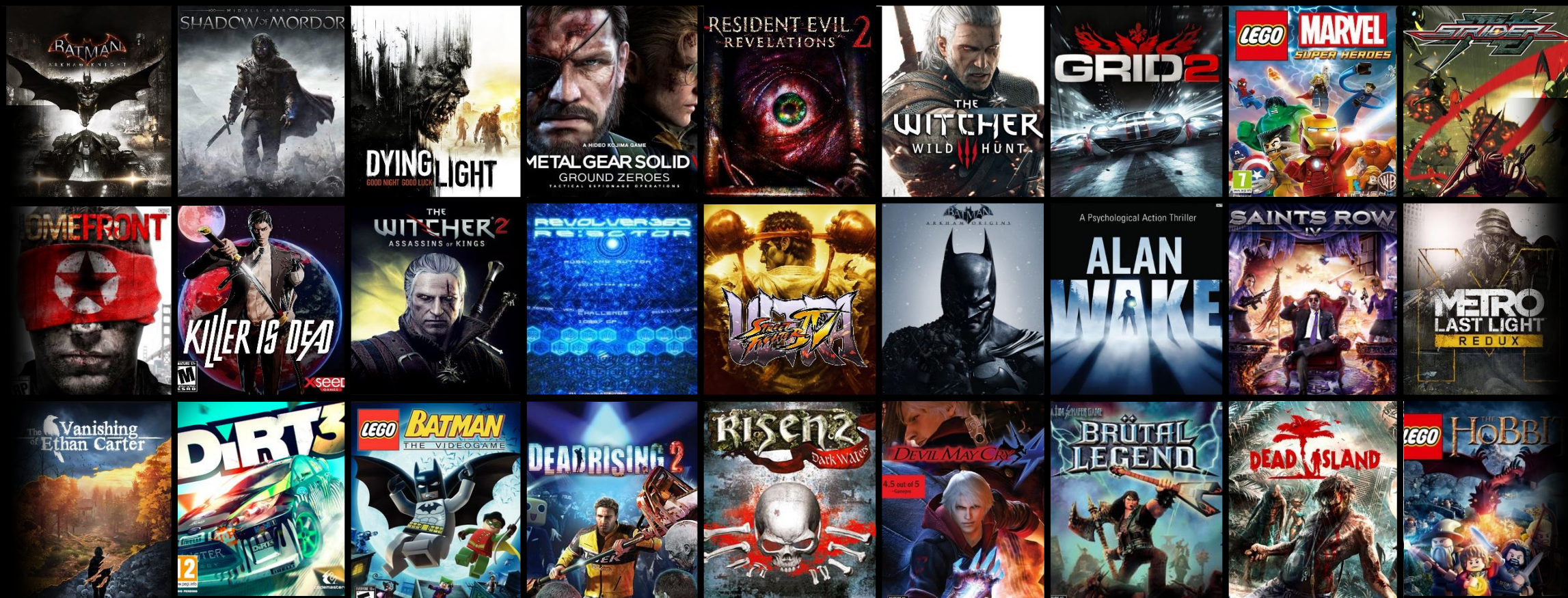
“HALF THE BLINK OF AN EYE”



Game Input Latency



GRID CONTENT



GRID API SUPPORT

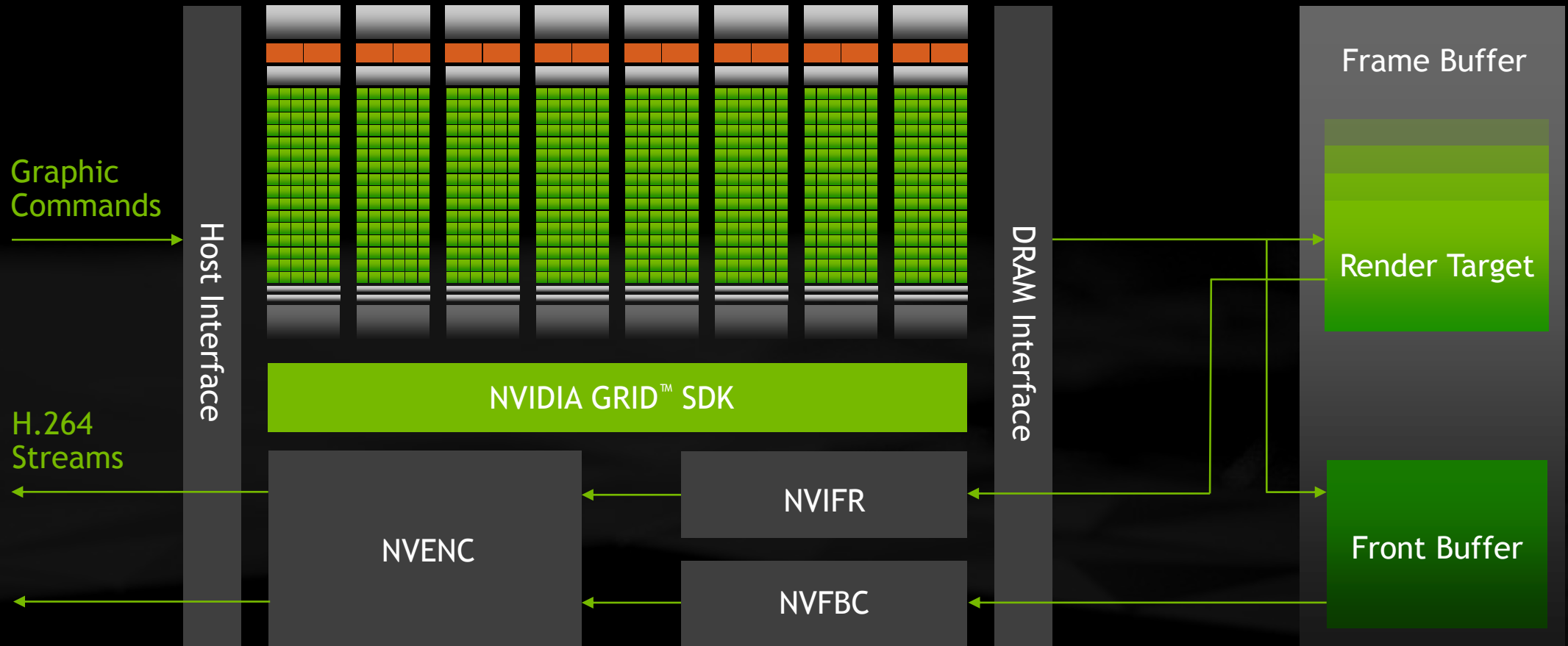
Supported APIs

- DirectX
- OpenGL
- PhysX (CUDA)

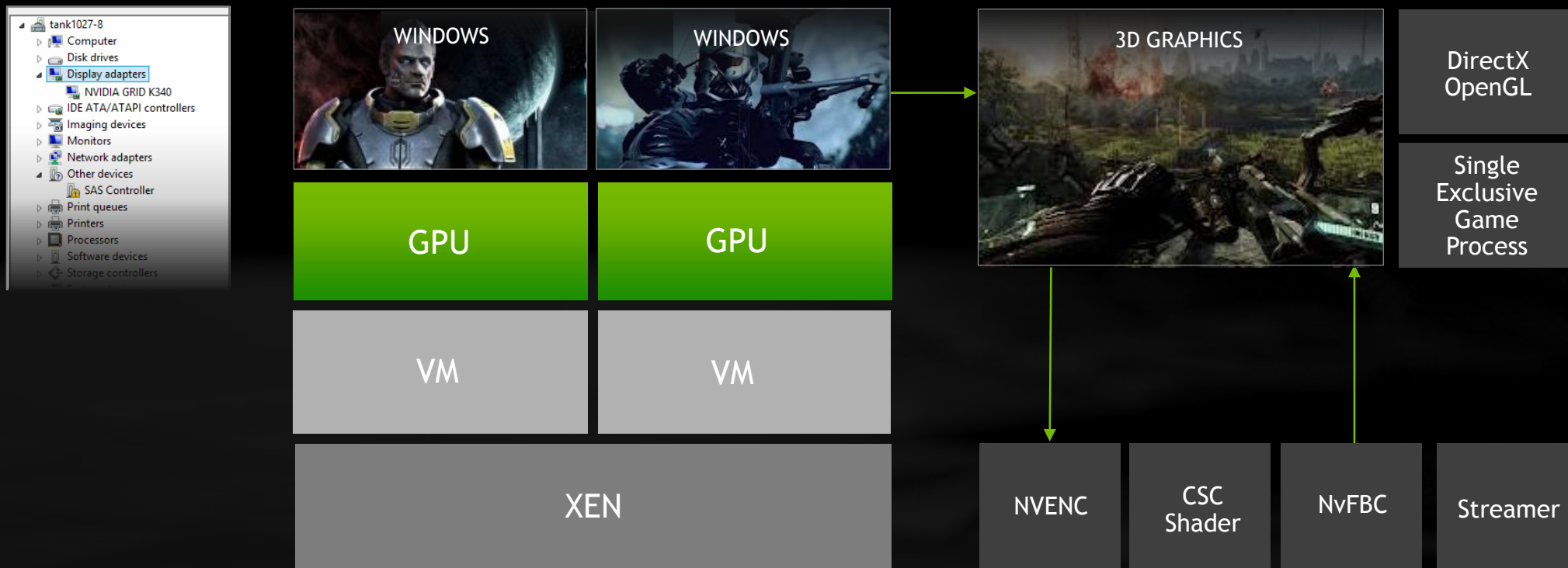
Microsoft®
DirectX®



CAPTURE AND ENCODE



VIRTUALIZED ENVIRONMENT



One Game Stream Per VM Per GPU
One VM Instance Connects to One GPU



KEPLER VS MAXWELL

Key Cloud Metrics

	Kepler GK104	Maxwell GM204	Speed Up
GPU Specs	1536 Cores 800 Mhz	2048 Cores 1100 Mhz	
TFLOPS	2.4	4.8	2X
Texture Fillrate (GT/s)	102	151	1.5X
Video Memory	4GB	8GB	2X
1080p30 H.264 streams	8	32	4x



WHERE TO FIND GRID?

Dedicated Capacity

- Data centers located around the world
- Choose the data center closer to user to cut down on latency

GRID Hardware Available On Amazon Web Services

- Scale on Demand and Flexible to configure
- No initial investment in hardware - Rent what you need
- Lots of Bandwidth from Servers to the Internet Backbone

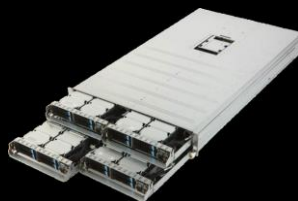


BUILDING GRID SERVERS



ASUS®

SUPERMICRO●



CARRI
Systems

GIGABYTE™
TECHNOLOGY



Cirrascale

Dual Socket Xeon E5

- 2x10 core 2.5 GHz CPUs
- SuperMicro & ASUS
- Up to 5 boards = 20 GPUs

Xeon E3 Systems

- 4x 4-Core 3.5 GHz CPUs
- 2 Boards = 8 GPUs
- Cirrascale, CARRI/GIGABYTE



NVIDIA GRID™ PRESENTATIONS 3/6/2015

10:00 am — 10:10 am NVIDIA GRID™ Platform

10:10 am — 11:00 am GRID™ Architecture Overview
GameStream - Low Latency Streaming

11:30 am — 12:00 pm Data Analytics from the NVIDIA GRID™

12:15 pm — 1:15 pm Best Practices for Games on NVIDIA GRID™
NVIDIA GRID™ Link SDK



RESOURCES

- Signup for GameWorks!
 - <https://developer.nvidia.com/gameworks-registered-developer-program>
- Android TV Developer Guide
 - <https://developer.nvidia.com/android-tv-developer-guide>
 - http://developer.android.com/guide/practices/screens_support.html
- NVGamePad Library
 - <http://developer.nvidia.com/cross-platform-gamepad-api>
- Contact:
 - GRID-developer-support@nvidia.com

