NVIDIA EGX™ SERVER FOR BARE METAL RENDERING WITH AUTODESK ARNOLD 5.3.0.0 DESIGN GUIDE

VERSION: 1.1

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SOLUTION OVERVIEW

Designed and tested through multi-vendor cooperation between NVIDIA and its system and ISV partners, NVIDIA EGX™ Server provides a trusted environment for artists and designers to create professional, photorealistic images for the Media & Entertainment; Architecture, Engineering & Construction; and Manufacturing & Design industries.

1.1   NVIDIA EGX SERVER OVERVIEW

Introduction:
Content production is undergoing a massive surge as render complexity and quality increases. Designers and artists across industries continually strive to produce more visually rich content faster than ever before, yet find their creativity and productivity bound by inefficient CPU-based render solutions. NVIDIA EGX Server is a validated solution that brings GPU-accelerated power and performance to deliver the most efficient end-to-end rendering solution, from interactive sessions in the desktop to final batch rendering in the data center.

Audience:
The audience for this document include, but not limited to: Sales Engineers, Field Consultants, Professional Services, Partner Engineers, IT Managers and Customers who wish to take advantage of an appliance that is built and optimized to deliver on batch rendering workflows.

Chapter 2.

SOLUTION DETAILS

NVIDIA EGX Server for Bare Metal Rendering with Autodesk Arnold 5.3.0.0 is a reference design comprised of (a) NVIDIA Quadro RTX A6000, A40, RTX 8000 or RTX 6000 graphics cards; (b) Autodesk Arnold 5.3.0.0 rendering software; and a (c) Qualified OEM server system. Combined, this validated solution provides unprecedented rendering and compute performance at a fraction of the cost, space, and power consumption of traditional CPU-based render nodes.

Built on the NVIDIA Ampere™ architecture, the NVIDIA® Quadro RTX™ A6000 and NVIDIA® A40, combine 48GB of graphics memory with the latest generation RT Cores, Tensor Cores, and NVIDIA Ampere architecture CUDA® cores for unprecedented graphics, rendering, and AI performance. Additional support for a range of commercially available remote access software means you can access the power of your Quadro desktop workstation from anywhere. Achieve breakthrough innovations with the world's most powerful graphics solution.

NVIDIA Quadro RTX 8000, powered by the NVIDIA Turing™ architecture and the NVIDIA RTX platform, brings the most significant advancement in computer graphics in over a decade to professional workflows. Designers and artists can now wield the power of hardware-accelerated ray tracing, deep learning, and advanced shading to dramatically boost productivity and create amazing content faster than ever before.

Autodesk Arnold software is an advanced Monte Carlo raytracing renderer. It's designed for artists and for the demands of modern animation and visual effects (VFX) production. Originally co-developed with Sony Pictures Imageworks and now their main renderer, Arnold is used at over 300 studios worldwide including ILM, Framestore, MPC, The Mill and Digic Pictures. Arnold was the primary renderer on dozens of films from Monster House and Cloudy with a Chance of Meatballs to Pacific Rim and Gravity. It is available as a standalone renderer

on Linux, Windows and Mac OS X, with supported plug-ins for Maya, 3dsMax, Houdini, Cinema 4D, and Katana. It is the built-in interactive renderer for Maya and 3dsMax.

EGX Servers, built by our OEM Partners, undergo NVIDIA's Qualification test suite. Among systems that qualify as an EGX Server there is a subset that has gone through additional testing and validation for Autodesk Arnold workload. These EGX Server Validated systems capture best practices from NVIDIA and its ecosystem partners.

Configurations for the Validated EGX Servers are listed in the below segment.

2.1   VALIDATED SERVER CONFIGURATIONS

Table 1 outlines the servers utilized to complete the NVIDIA EGX Server validation process.

Table 1: Validated Server Configurations

Server Model	Graphics	Configuration
Advanced HPC Mercury RM408	4x Quadro RTX 8000 or RTX 6000 2x Quadro RTX NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 512 GB Memory 1.9 TB SSD
Advanced HPC Mercury RM424	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD

Advanced HPC SM 4029GP-TRT2	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD
AMAX QR-240 2U	4x Quadro RTX 8000 or RTX 6000 2x Quadro RTX NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 512 GB Memory 1.9 TB SSD
AMAX QR-480 4U	8x Quadro RTX™ 8000 or RTX™ 6000 4x Quadro RTX™ NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 768GB Memory 1.9TB SSD
ASUS ESC4000 G4 Series	4x Quadro RTX 8000 or RTX 6000 2x Quadro RTX NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 418 U1 (418.81)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 512 GB Memory 1.9 TB SSD
ASUS ESC8000 G4	8x Quadro RTX™ 8000 or RTX™ 6000 4x Quadro RTX™ NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 418 U1 (418.81)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 768GB Memory 1.9TB SSD
BOXX RAXX D3 server	3x Quadro RTX™ 8000 or RTX™ 6000 Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 5218 processor: 2.3GHz; 32 cores 32GB – 2TB ECC DDR4 memory

Colfax CX41060s-XK7 4U	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD
Equus G4760 (single root)	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD
Exxact TensorEX TS2-673917-RTX	4x Quadro RTX 8000 or RTX 6000 2x Quadro RTX NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 418 U1 (418.81)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 512 GB Memory 1.9 TB SSD
Exxact TensorEX TS4-1337043-RTX server	8x Quadro RTX™ 8000 or RTX™ 6000 4x Quadro RTX™ NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 418 U1 (418.81)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 768GB Memory 1.9TB SSD
Gigabyte W42G-P08R	4x Quadro RTX 6000 Quadro Driver Release 430 U3 (430.86)	Dual Intel® Xeon® Platinum 8176 processor: 2.1GHz DDR4 up to 1.5TB Memory
GPL SM 4029GP-TRT2	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory

		1TB M.2 PCIe NVMe SSD
HPE ProLiant ML350 Gen10	2x Quadro RTX 6000 / 2x Quadro RTX 8000 1x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 418 U1 (418.81)	Dual Intel® Xeon® Gold 6226 processor: 2.7 GHz 32GB HPE 2600 DDR4 SmartMemory 2TB HPE SSD
International Computer Concepts G429-i-6000	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 418 U2 (419.17)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD
International Computer Concepts G429-i-8000	8x Quadro RTX 8000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 418 U2 (419.17)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD
Images&Technologie IT-4200	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD
MBX Server	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD

Penguin Relion XE2114GT	4x Quadro RTX 8000 or RTX 6000 2x Quadro RTX NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 512 GB Memory 1.9 TB SSD
RAVE-AS-RTX6000-4	4x Quadro RTX 6000 2x Quadro RTX NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 512 GB Memory 1.9 TB SSD
RAVE-AS-RTX6000-8	8x Quadro RTX™ 6000 4x Quadro RTX™ NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 768GB Memory 1.9TB SSD
RAVE-AS-RTX8000-4	4x Quadro RTX 8000 2x Quadro RTX NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 512 GB Memory 1.9 TB SSD
RAVE-AS-RTX8000-8	8x Quadro RTX™ 8000 4x Quadro RTX™ NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 768GB Memory 1.9TB SSD
RAVE-SM-RTX6000-8	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD

RAVE-SM-RTX8000-8	8x Quadro RTX 8000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD
Supermicro 7049GP-TRT	4x Quadro RTX 8000 or RTX 6000 2x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6148processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD
Supermicro SuperServer 4029GP-TRT2	8x Quadro RTX 8000 4x Quadro RTX NVLink HB bridge 2-slot Quadro Driver Release 430 U2 (430.64)	Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads 256GB ECC DDR4 memory 1TB M.2 PCIe NVMe SSD
Supermicro SuperServer 1019GP-TT	2x Quadro RTX 8000 NVIDIA driver version 431.02	1 x Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz (16 cores, 32 logical 128GB ECC DDR4 memory 980 GB Intel SSD
Tyan Thunder HX FT48T-B7105	4x Quadro RTX 6000 Quadro Driver Release 430 U2 (430.64)	Dual-Socket 2nd Gen. Intel Xeon Scalable Processors Up to 1.5TB DDR4 RDIMM/LRDIMM ECC Memory
Tyan Thunder HX FT77D-B7109	8x Quadro RTX 6000 4x Quadro RTX NVLink HB bridge 2-slot	Dual socket 2nd Gen Xeon Scalable Processor

	Quadro Driver Release 430 U2 (430.64)	Up to 3TB DDR4 RAM