



NVIDIA RTX™ SERVER FOR
BARE METAL RENDERING
WITH AUTODESK ARNOLD 5.3.0.0
ON ASUS ESC4000 G4 SERIES
DESIGN GUIDE

VERSION: 1.0



TABLE OF CONTENTS

- Chapter 1. SOLUTION OVERVIEW..... 1**
- 1.1 RTX Server Overview..... 1
- Chapter 2. SOLUTION DETAIL2**
- 2.1 Solution Configuration..... 3

Chapter 1.

SOLUTION OVERVIEW

Designed and tested through multi-vendor cooperation between NVIDIA and its system and ISV partners, NVIDIA RTX™ 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 RTX 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 RTX 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 DETAIL

NVIDIA RTX Server for Bare Metal Rendering with Autodesk Arnold on the ASUS ESC4000 G4 Series is a reference design comprised of (a) NVIDIA Quadro RTX 8000 or RTX 6000 graphics cards; (b) Autodesk Arnold rendering software; and (c) ASUS ESC4000 G4 Series server. 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.

NVIDIA® Quadro RTX 8000 and RTX 6000, 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.

The ASUS ESC4000 G4 series is built on the Intel® Xeon® Scalable Platform to deliver incredible 2U server performance, packing incredible power into minimal space. 16

DIMM slots provide best-in-class memory capacity and bandwidth, and an integrated I/O controller on the processor eliminates data transfer bottlenecks caused by discrete I/O chipsets for reduced latency and dramatically faster system performance. The ESC4000 G4 series offers eight full-length PCI Express 3.0 x16 (4 at x16 Link or 8 at x8 Link), one low-profile PCI Express 3.0 x24 with support of a riser card for additional one PCI Express x16 (x16 Gen3 Link) and one PCI Express x8. One PCI Express x8 for internal HBA/RAID card. Flexible expandability in a 2U form factor supports diverse storage and networking applications to meet the demands of future expansion and high scalability. Product detail page link located here: <https://www.asus.com/us/Commercial-Servers-Workstations/ESC4000-G4/>

2.1 SOLUTION CONFIGURATION

Table 1 outlines the system configuration utilized to complete the rigorous NVIDIA NVQual verification as well as the NVIDIA RTX Server validation process.

Table 1: Solution components

Component	Vendor & Model	Details
System	ASUS ESC4000 G4 Series	<ul style="list-style-type: none"> • Dual Intel® Xeon® Gold 6126 processor: 2.6-3.7GHz; 12 Cores, 24 Threads • 512 GB Memory • 1.9 TB SSD
Graphics	4x Quadro RTX 8000 or RTX 6000 2x Quadro RTX NVLink High Bandwidth Bridge 2-slot Quadro Driver Release 418 U1 (418.81)	<ul style="list-style-type: none"> • GPU memory: 48GB or 24GB • CUDA cores: 4,608 • Tensor cores: 576 • RT cores: 72

Application	Autodesk Arnold 5.3.0.0	
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