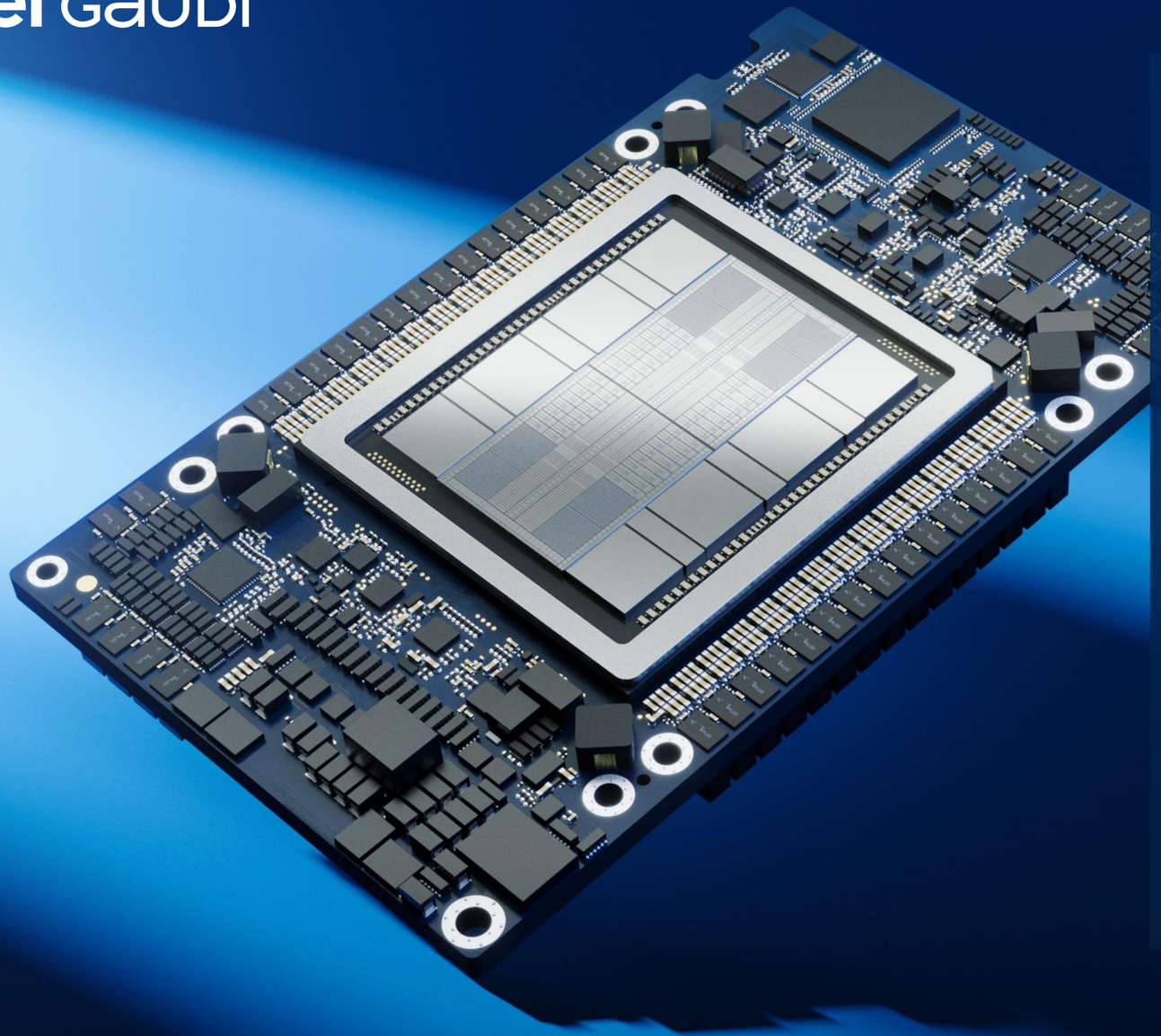
intel GAUDI



Programming Novel AI Accelerators for Scientific Computing Intel®

Intel® Gaudi® 3 AI accelerator

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INTEL® GAUDI® 3 AI ACCELERATOR

Accelerator Card

OAM-Compliant (HL-325L)

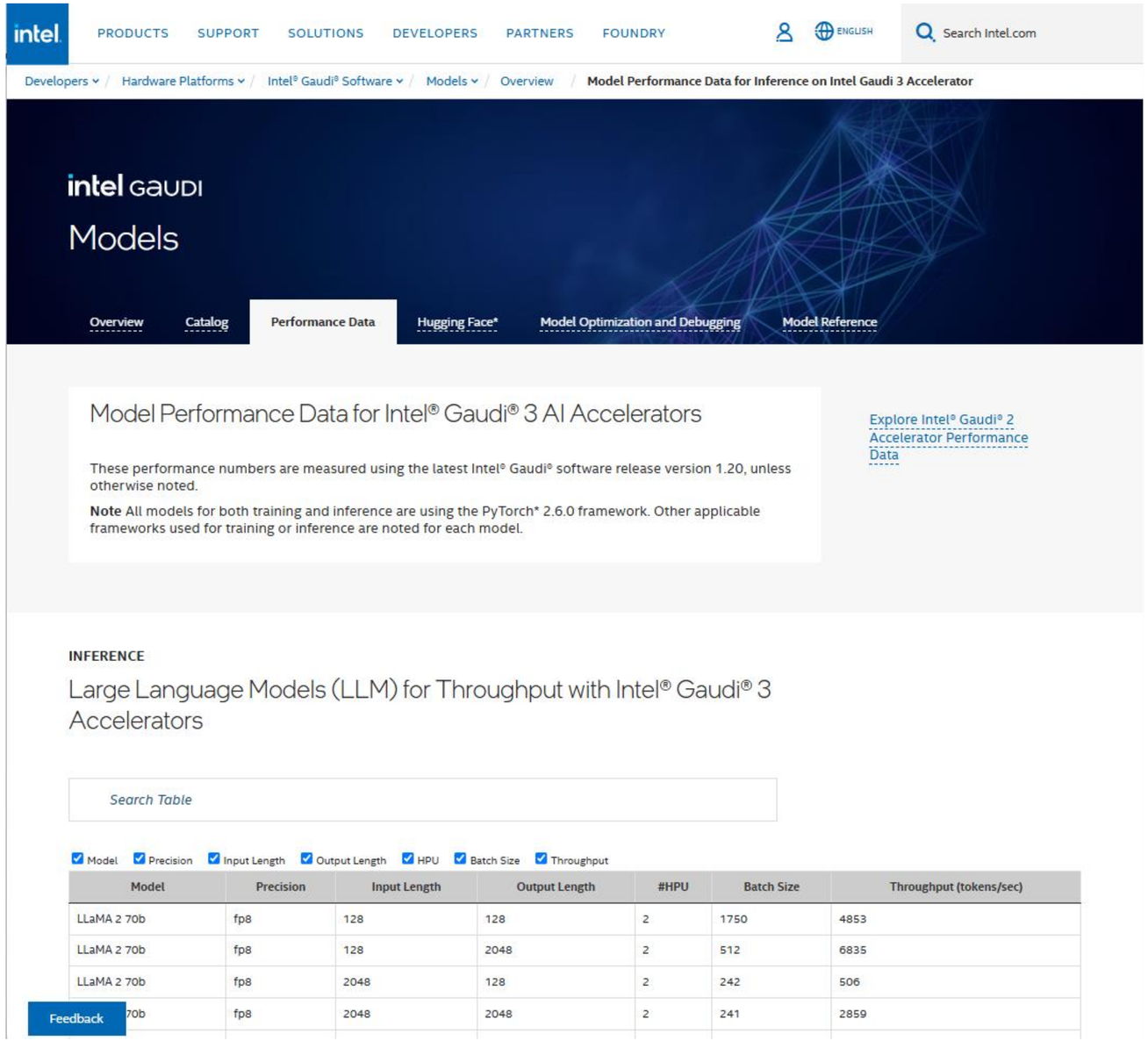
INTEL® GAUDI® 3 AI ACCELERATOR

PCIe CEM

Add-In Card (HL-338)

5th Generation Tensor Processor Core	**Architecture**	5th Generation Tensor Processor Core
900W	**TDP**	600W
OAM-Compliant (HL-325L)	**Form Factor**	FH 10.5" in length, Double Width (x16 PCIe Gen 5.0)
128 GB/s bidirectional	**PCIE Peak BW**	128 GB/s bidirectional
FP32, BF16, FP16 & FP8 (both E4M3 and E5M2)	**Data Types**	FP32, BF16, FP16 & FP8 (both E4M3 and E5M2)
8 x HBM2E	**HBM**	8 x HBM2E
128 GB	**HBM Capacity**	128 GB
3.7 TB/s	**HBM Peak BW**	3.7 TB/s
96 MB	**On-die-SRAM**	96 MB
19.2 TB/s	**On-die-SRAM BW**	19.2 TB/s
x8 UBB	**Card Config(s)**	1x4 (Bridged), 2x4 (Bridged), 1 or 4 cards (Unbridged)
1200 GB/s bidirectional (24x200 GbE)	**Networking**	900 GB/s bidirectional (18x200 GbE)

Gaudi 3 Performance



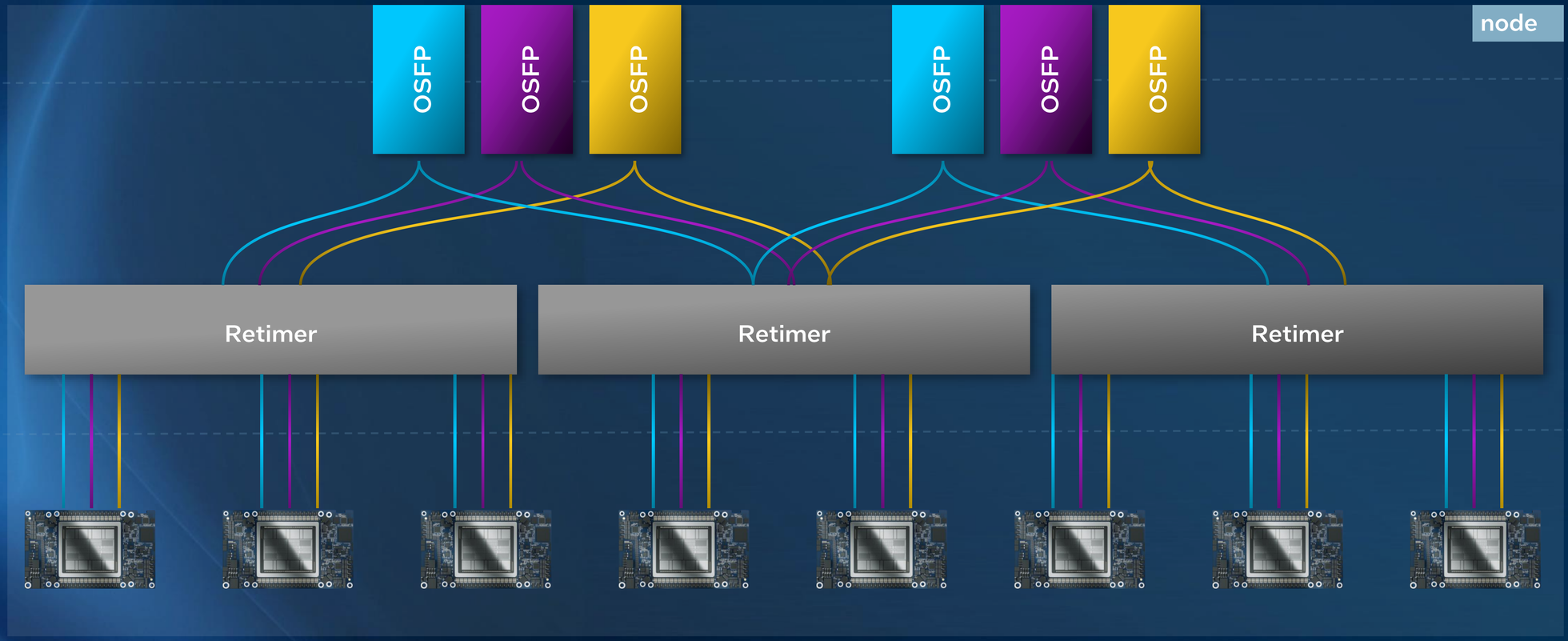
Gaudi 3 Performance

- 20%-43% more tokens per second than H200
- 1.2X tokens-per-dollar compared to H200
- 3.35X tokens-per-dollar compared to H100

Source: Intel® Gaudi® 3 AI Accelerator at Scale on IBM Cloud, https://signal65.com/research/ai/signal65-lab-insight-intel-gaudi-3-accelerates-ai-at-scale-on-ibm-cloud/

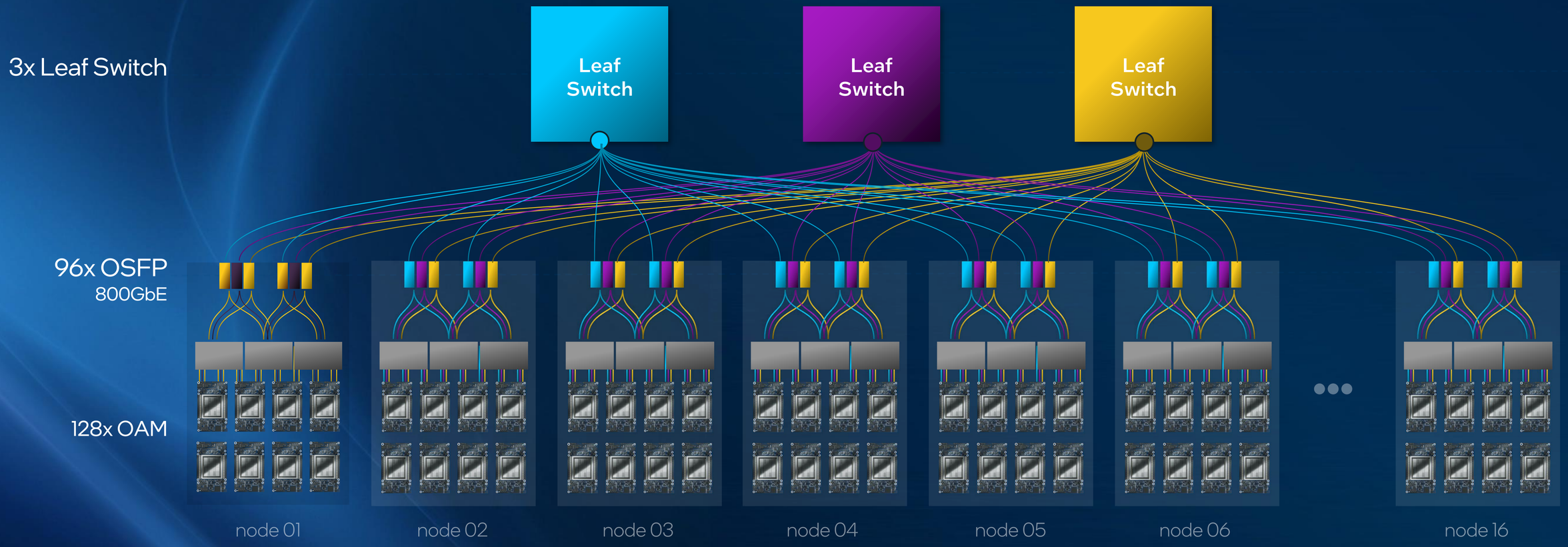
Intel Gaudi 3 Accelerator Scale-out for GenAI Requirements

Node Level Architecture



Intel Gaudi 3 Accelerator Scale-out

Sub-Cluster Level Architecture (16 Nodes)

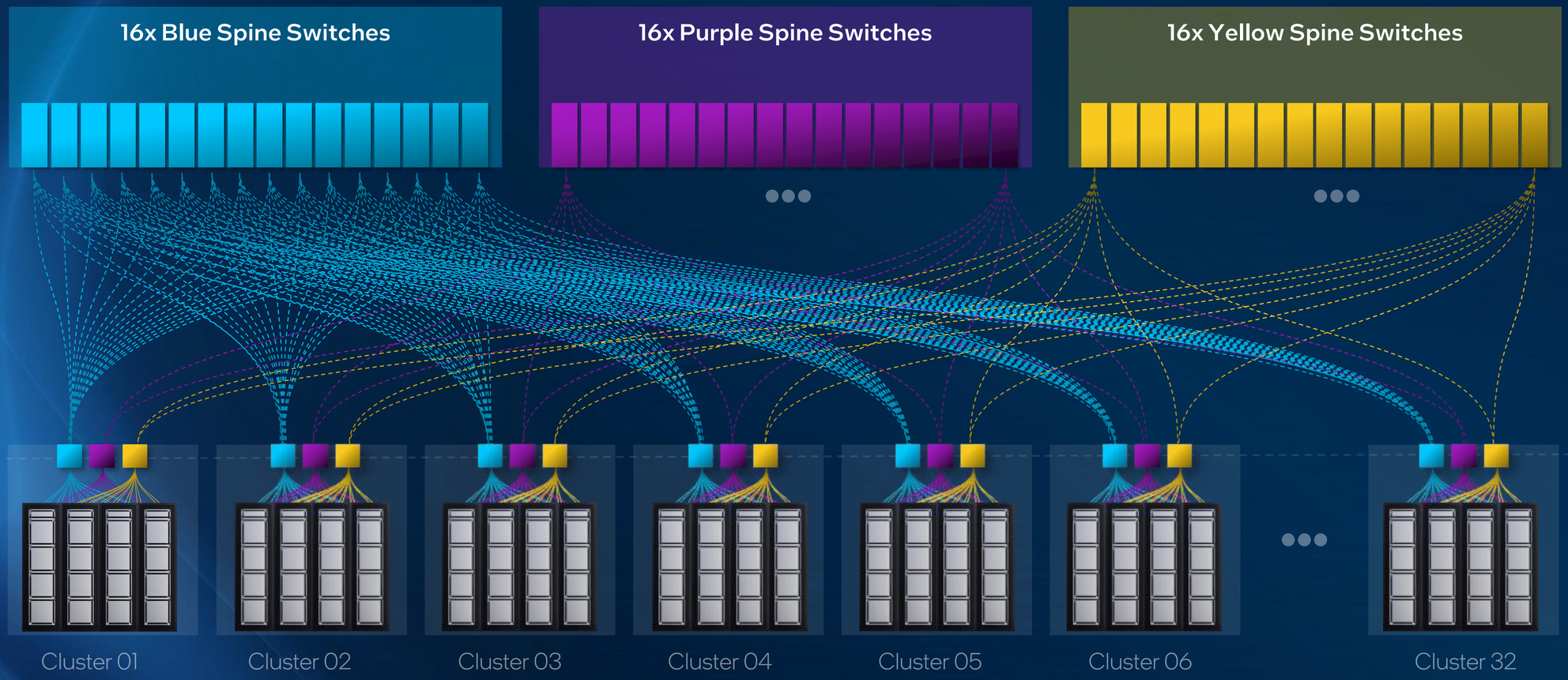


Intel Gaudi 3 accelerator Scale-out meets GenAI Requirements

Cluster Level Architecture (512 Nodes)

48 x Spine Switches
64 port 800 Gb

2 x 800 GbE
for each connection



Delivering Price Performance Advantage

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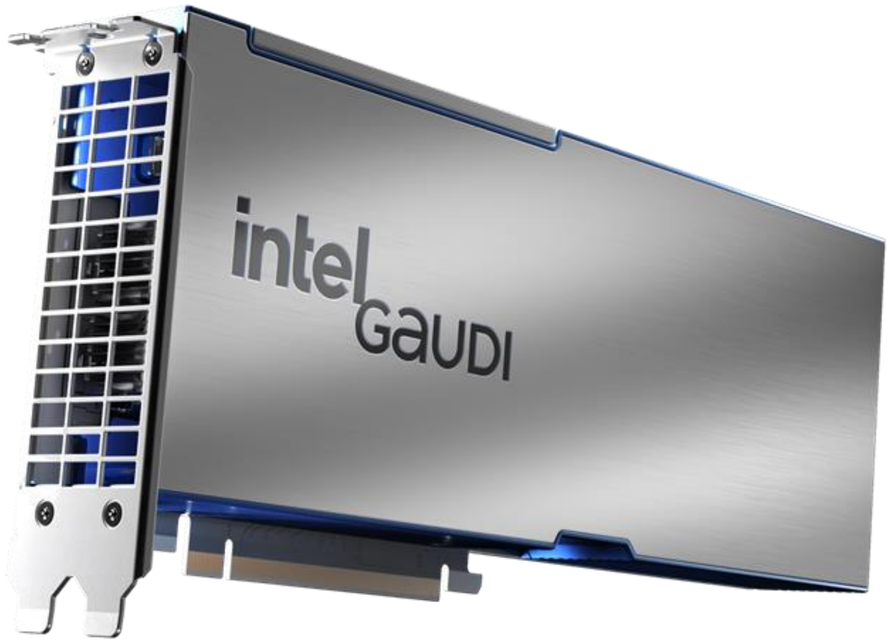

up to 1.7x tokens/sec

Inference Throughput
Gaudi 3 PCIe Card
Vs H100 NVL

up to 3.0x perf/$

Inference Throughput
Gaudi 3 PCIe Card
Vs H100 NVL

Online inference performance measured as output token throughput at FP8 precision using LLAMA 3.3 70B 2048/128 with vLLM shows 1.7x better throughput on Gaudi 3 PCIe vs H100 with two cards.
Pricing estimates based on publicly available information and Intel internal analysis as of 8/27/2025

1. See backup for workloads and configurations. Your costs and results may vary.

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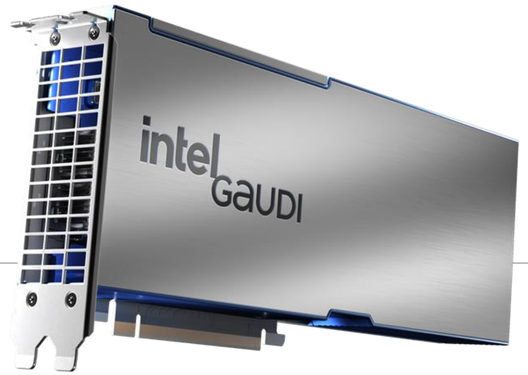
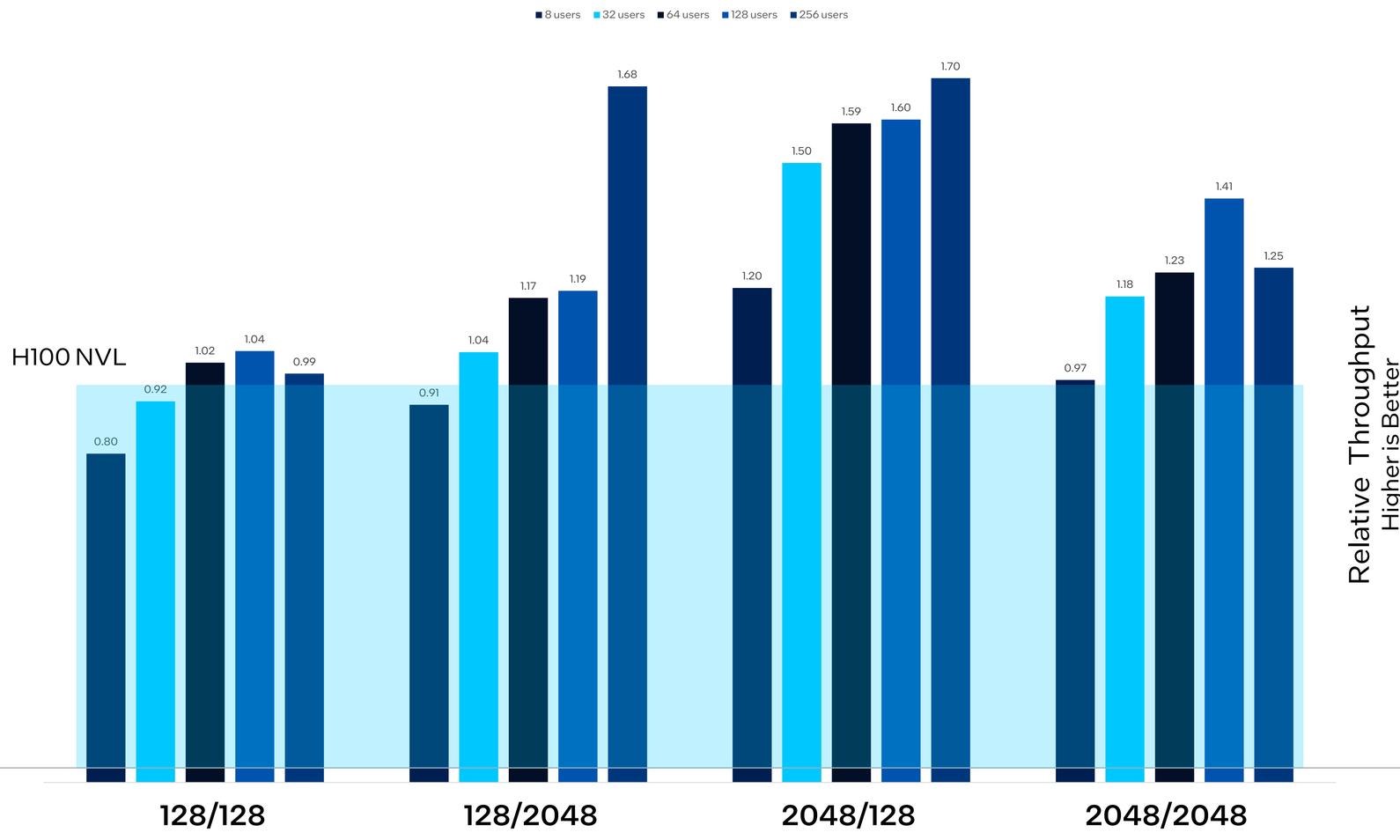
1.2x tokens/sec

Geometric mean of throughputs

Gaudi 3 PCIe Card
Vs H100 NVL





Claim: Throughput measured as Geometric mean of throughputs across scenarios 2048/128, 2048/2048 representing various real world use cases and Concurrency spanning 8,32,64,128,256 users

1. See backup for workloads and configurations. Your costs and results may vary.

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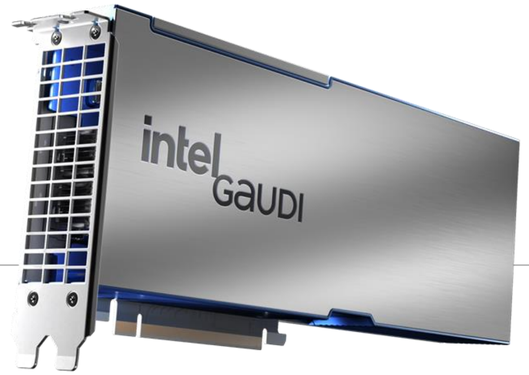
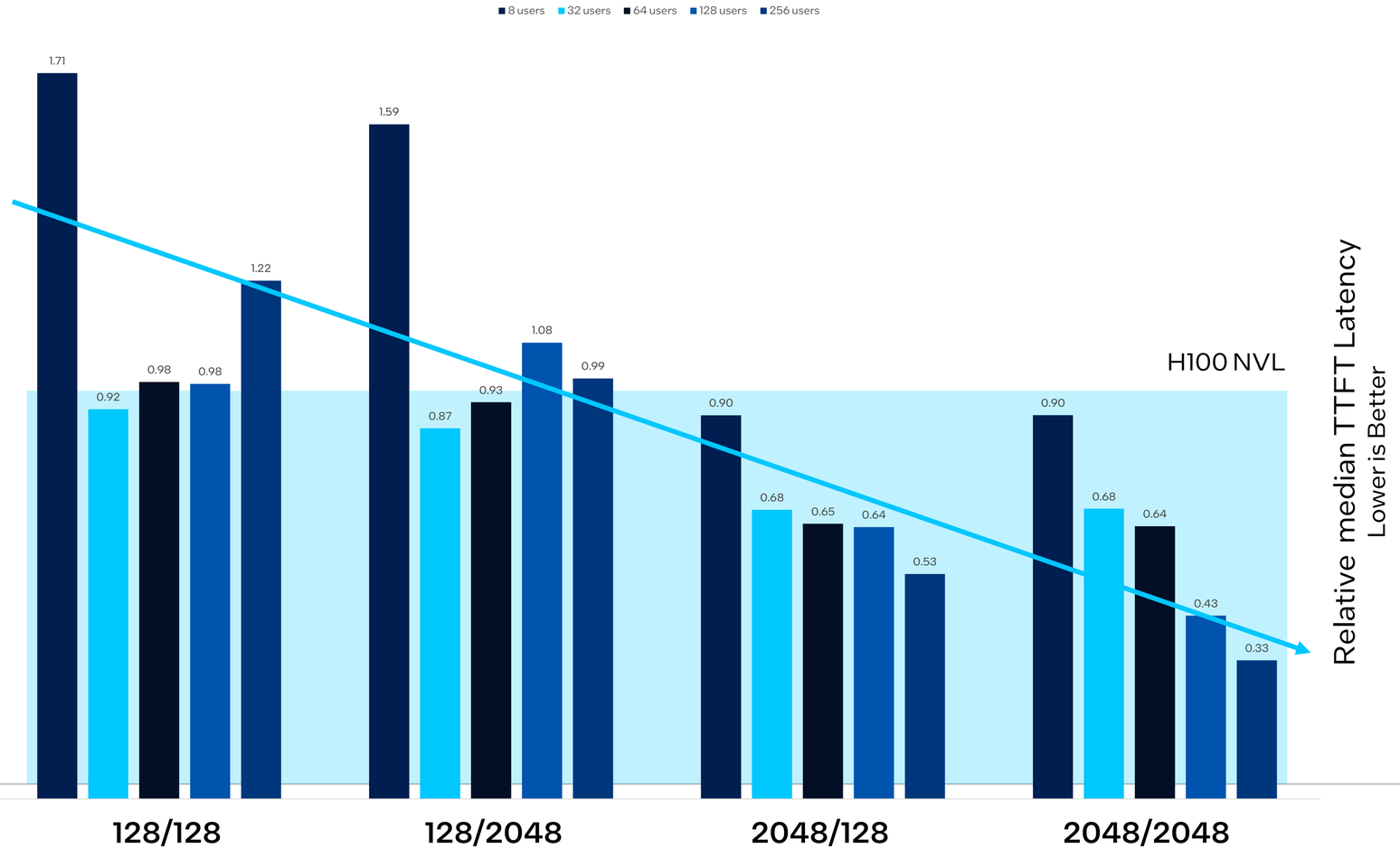
Delivers lower latency at higher context sizes vs H100 NVL





Claim: Online inference performance measured as time to first token at FP8 precision using LLAMA 3.3 70B with vLLM shows to be in the range of 1.71x to 0.33x on Gaudi 3 PCIe vs H100 with two cards

1. See backup for workloads and configurations. Your costs and results may vary.

Delivering Price Performance Advantage vs H200 NVL

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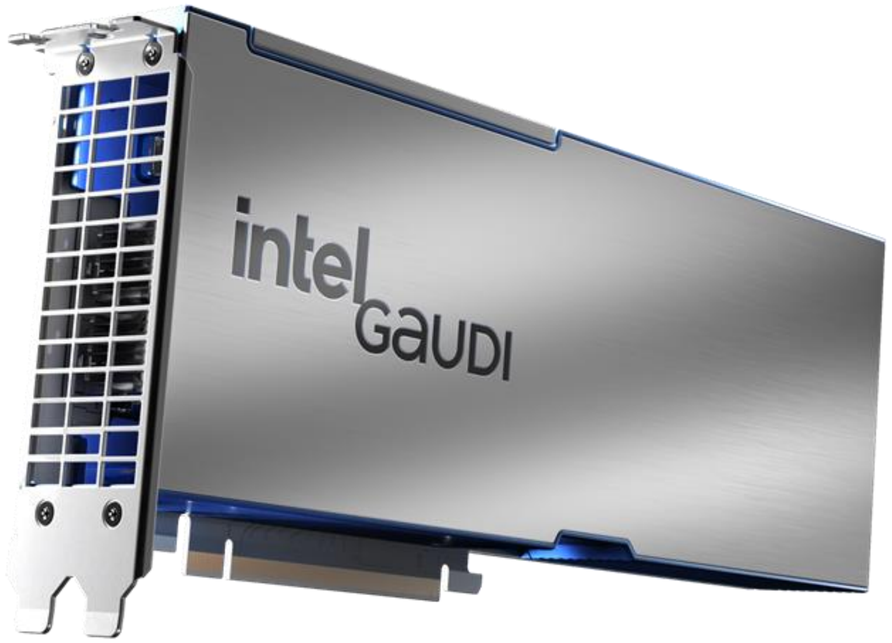


up to **2.15x** tokens/sec

Inference Throughput
Gaudi 3 PCIe Card
Vs H200 NVL

up to **6x** perf/$

Inference Throughput
Gaudi 3 PCIe Card
Vs H200 NVL

1. See backup for workloads and configurations. Your costs and results may vary.
Online inference performance measured as output token throughput at FP8 precision using LLAMA 3.3 70B 2048/128 with 256 user using vLLM shows 2.15x better throughput on Gaudi 3 PCIe vs H200NVL with four cards.
Pricing estimates based on publicly available information and Intel internal analysis as of 10/21/2025

Can AI inference scalability be simpler? **It can!**

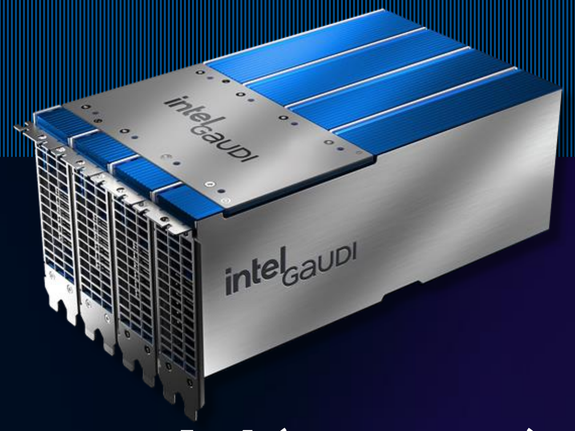
Scale your AI to meet your needs with flexible, performant Intel® Gaudi® 3 PCIe cards.

Intel® Gaudi® 3 PCIe cards provide a modular AI growth path without overcommitment, making them a great choice for early pilots or phased AI deployments.

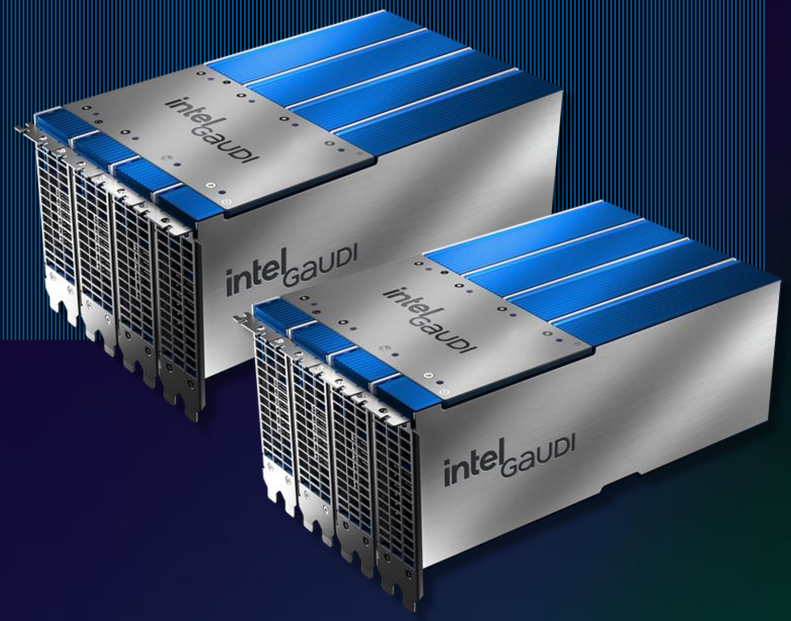
Scale up your AI infrastructure from one to up to eight Intel® Gaudi® 3 PCIe cards per system to meet your specific AI needs.

Inference - Lower latency, increased users, higher throughput

1 or 4 cards (unbridged)



1x4 (1 top bridge)



2x4 (2 top bridges)

Intel® Gaudi® 3 AI accelerator Software Suite

Integrates the main Gen AI frameworks used today

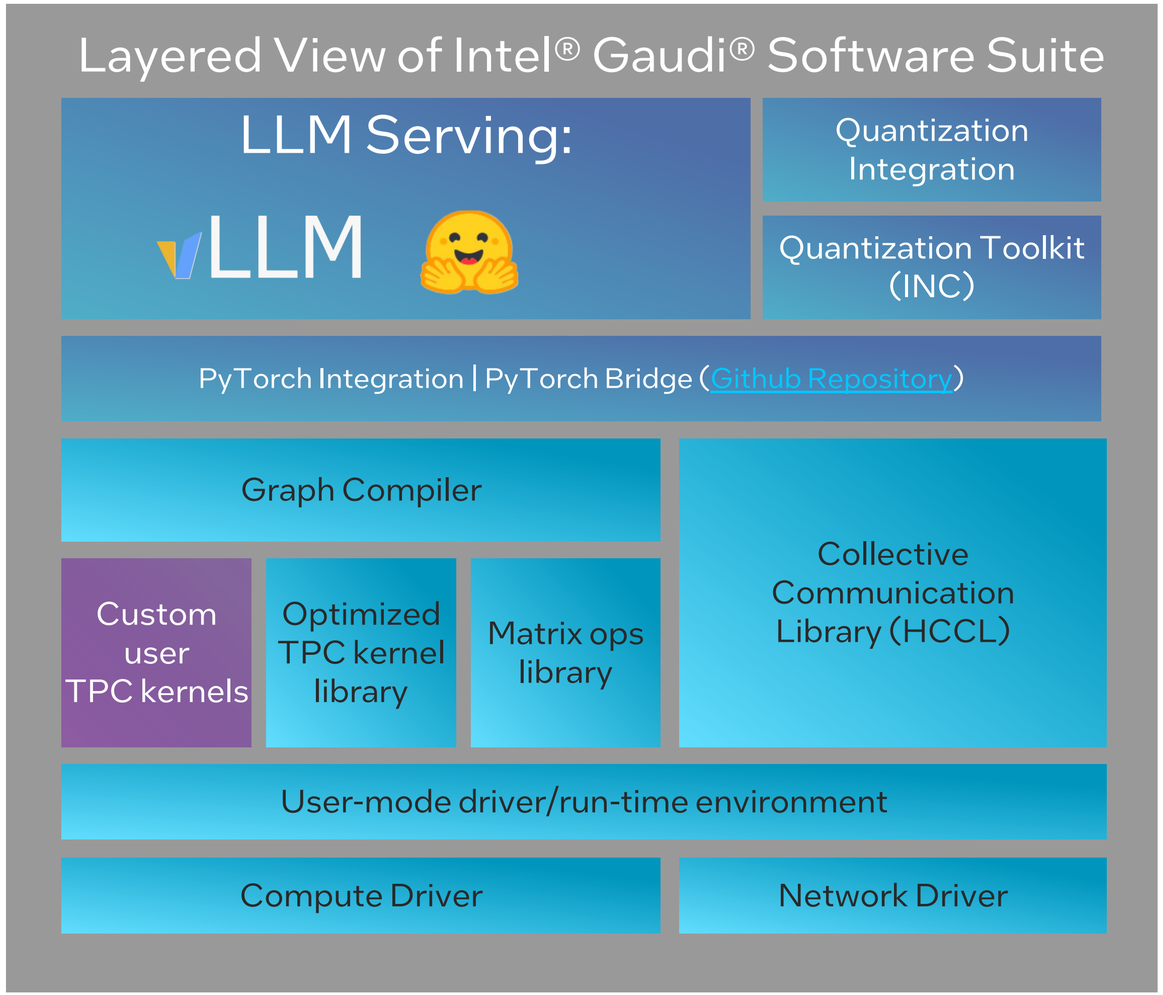
Supports BF16 and FP8 quantization

vLLM Integration

- **Upstream support in vLLM mainline**
- Continuous batching, paged attention
- Multi-step scheduling
- Speculative decoding

Gaudi PyTorch Bridge

- Open sourced
- Work with the latest upstream PyTorch
- TPC fuser



Ways to Run Models on Gaudi 3

Intel Model References GitHub

A collection of deep neural network (CV, NLP, Diffusion, LLM) models that have been migrated to run on Intel Gaudi AI accelerators, including examples for training, fine-tuning, and inference

Hugging Face

Start with examples of training, fine-tuning, and inference or use the Optimum Habana library with any transformer (NLP, code generation, translation, Q&A) model

vLLM Fork

Instructions for serving models in vLLM on Gaudi

Other PyTorch Models

Migrate models built for CPUs or GPUs.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